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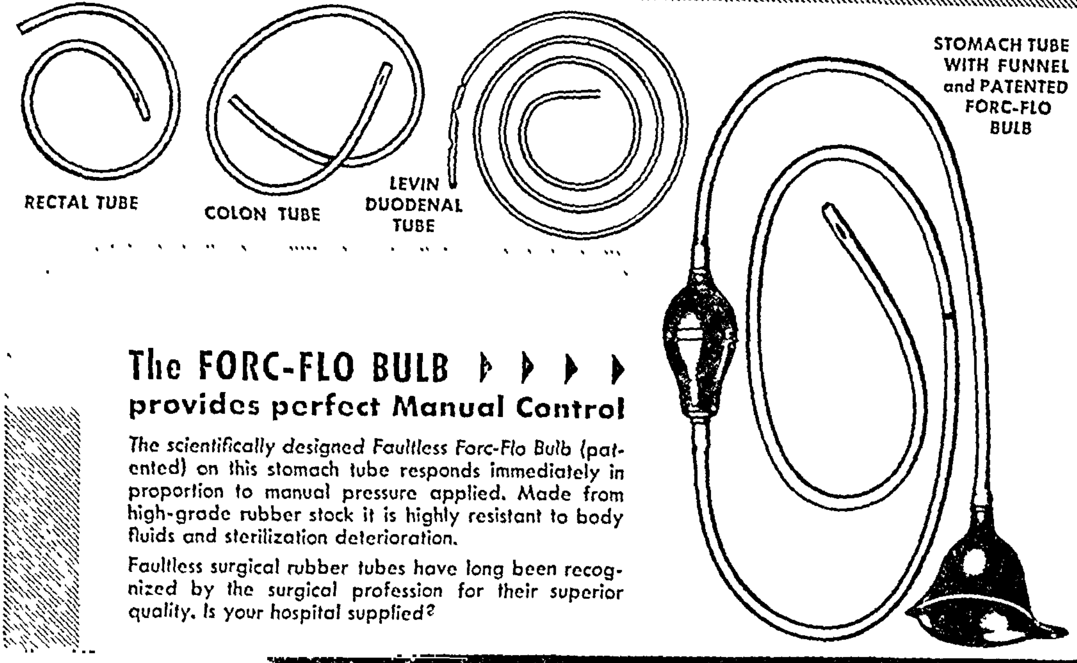
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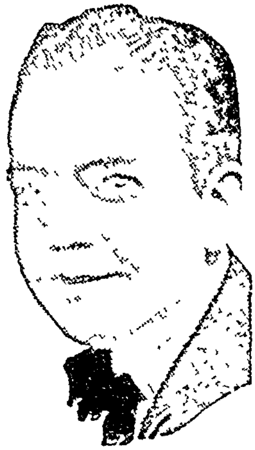

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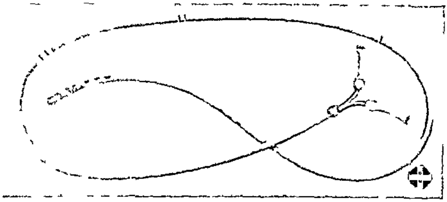

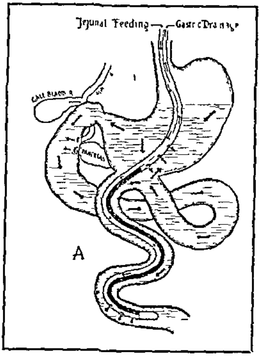

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The Journal of the

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Volume V MAY-JUNE 1942 *Number* 3

Editorial

Neurosurgery

THIS Neurosurgical issue of the Journal of the International College of Surgeons is in recognition of the fact, by the surgical profession, that neurosurgery is an established specialty and is accepted as such by the bulk of the medical profession. While admittedly this specialty is still very much in its infancy, yet the splendid results obtained by those even as yet poorly trained but giving their full time and attention to it, attests to the importance of the individual surgeon giving his full concern to a complicated, highly specialized, surgical field. The general surgeons deserve full recognition for their part in pointing the way for those to follow in the many pertinent, careful observations they have taught and recorded which had a direct bearing on the development of this specialty. Without the early stimulating teaching and writings of the general surgeons, Keen, Horsley, Krause, de Martel, and many others, neurosurgery as a specialty would still be only an immature idea. Indeed, many of our most noted and skilled surgeons holding high places in our leading teaching institutions gave up the practice of gene [illegible] to give full time to the st [illegible] of neurosurgery. Our amples were the late Charles Harrison Frazier at the University of Pennsylvania and Harvey Cushing at Johns Hopkins University, later at Harvard.

It is quite noticeable among the general surgeons that those most skilled have the wisdom not to be enticed into attempting operations in this most complicated specialty. Surgical skill alone is not enough for success; the diagnosis must also be made by the surgeon and this means that the surgeon must be a neurologist—at least to the point of being well trained in surgical neurology. It must be admitted that a thorough training in general surgery is by far the best background for the training of the neurosurgeon and the present prevailing method of a two or three years' neurosurgical training of an interne, then turning him out as a full-fledged specialist entirely on his own responsibility, is open to question in developing real skill in neurosurgery.

The neurosurgeon is egotistical enough to believe and hope that he has added to the knowledge of the surgical profession to an extent far beyond the proportion of the actual number of specialists in this line. Witness the freedom from sepsis, shock, anesthetics, and deaths in neurosurgical operations requiring several hours to perform—many of them on relatively poor operative risks. Also the reduction of operating time for craniotomy for brain tumor from an ordeal which formerly required from five to twelve hours which now is commonly consummated in from two to three hours.

Neurosurgery still admits that neurosurgical knowledge and technique has little more than just started, but it sincerely believes that with the united efforts of our disciples, consecrated to the highest ideals of our medical profession, that it will still progress as an invaluable adjunct to the healing art. The opportunities for untiring energy and thought are unlimited in neurosurgery. The rewards may be few and infrequent, but brave hearts will find them tasty morsels, palatable in proportion to the honest toil expended.

The neurosurgical horizon, to be sure, will never be reached although, as we look hopefully forward, it seems just ahead. Nevertheless, it can be said that neurosurgery at the present time is well on its way—hand in hand with the many other specialties in our great common crusade against pain and illness.

J. Rudolph Jaeger.

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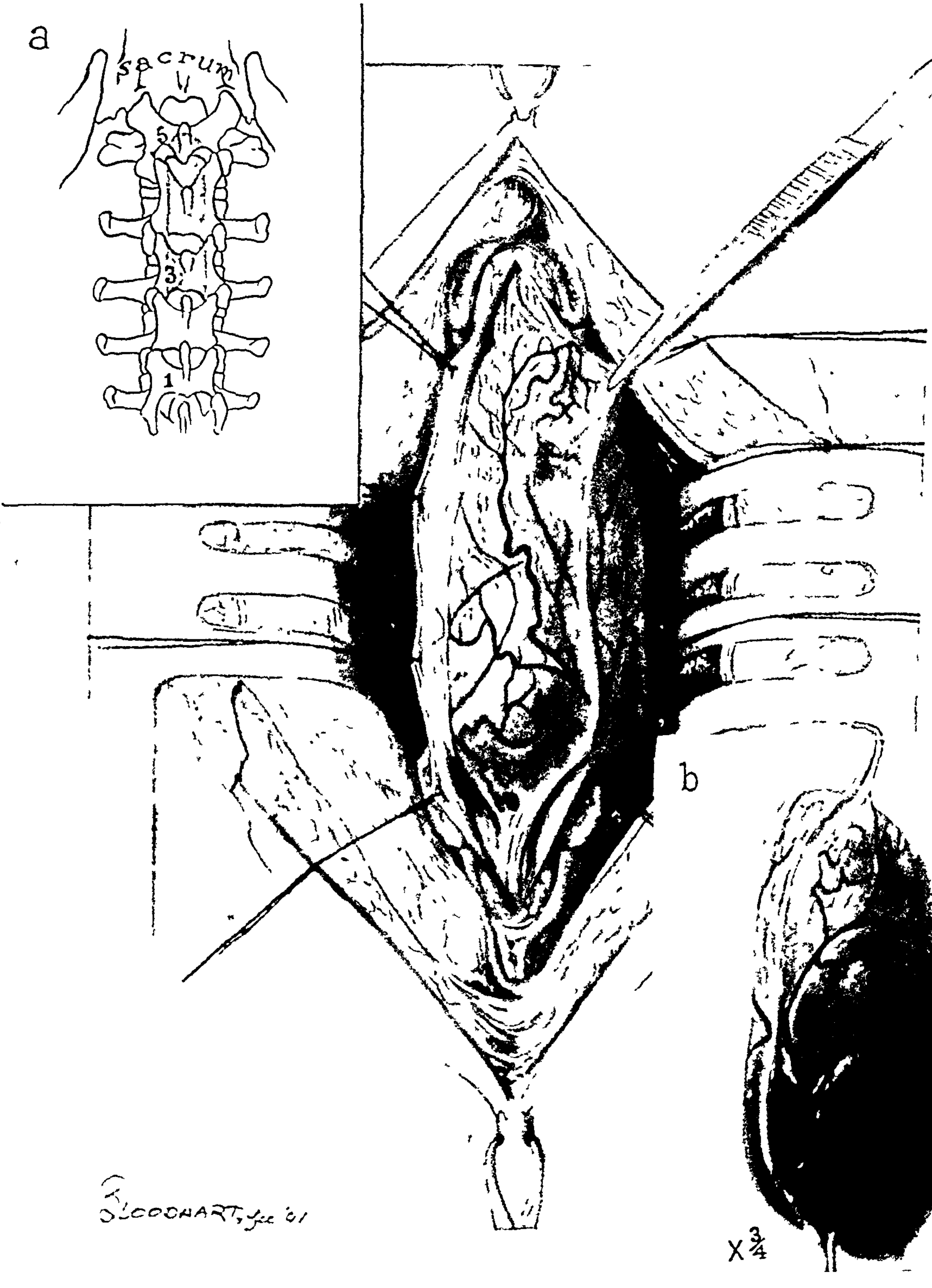

Fig 1 Tumor as it appeared at the time of operation showing sensory division of the nerve root coursing over the tumor Insert (a) approximate location of tumor in the spinal canal. Insert (b) sensory division of the nerve root as it was found to course around the side of the tumor, and the motor division that appeared to develop into a fusiform enlargement constituting the tumor

Surgical Lesions about the Spinal Canal and the Significance of the Character of Pain in Differential Diagnosis and Localization*

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WHEN space-occupying lesions in or about the spinal canal enlarge sufficiently, they will eventually come to involve one or more spinal roots. If such lesions, e.g., neoplasms, posterior herniations of the *nucleus pulposus*, etc., first involve a spinal root, the earliest symptom is usually an irritative one, and consists mainly of pain. On the other hand, if these lesions have their origin within or adjacent to the spinal cord, they may for a short time give signs of involvement of the spinal pathways, then pain may not be the initial symptom. However, it usually appears early, certainly long before subarachnoid block and profound cord changes take place.

The early recognition of these lesions is of importance since they usually lend themselves to successful surgical treatment. Of further importance, early recognition and operative interference preclude prolonged preoperative disability, and postoperative morbidity. Conversely, if these lesions are allowed to progress to extensive sensory changes and paralysis, recovery is usually prolonged and often incomplete.

The early signs of space-occupying lesions, which impinge directly upon the spinal cord or arise within its substance, depend largely on the part of the cord first affected. Dorsally situated lesions, such as the frequently encountered meningioma, might early give rise to minor disturbances of proprioception, but ordinarily of such quality that the patient either would not recognize the disability or would ignore the defect. As the lesion expands, traction or pressure on one or more spinal roots soon takes place, certainly long before symptoms of a complete transverse lesion manifest themselves. Thus, as a rule, pain comes on months or even years before extensive cord damage occurs.

If pressure on the cord is exerted by laterally situated lesions, a partial Brown-Séquard syndrome could reasonably become a part of the clinical picture. Here again pain would most certainly make an early appearance, since laterally located lesions would quickly come to involve one or more spinal roots. It, therefore, becomes clear that the early manifestations of space-occupying lesions about the spinal canal depend largely on the part of the spinal cord which first becomes affected, and pain is almost universally the earliest complaint.

In order to arrive at an early diagnosis during the state of pain, and before the onset of profound cord changes, a careful study of the character of the pain is most essential. Although pain is a common complaint of almost all diseases, it differs greatly in its character, intensity and distribution, and is inclined to show certain characteristic features which tend to identify the underlying disease process. An excellent analysis has been made of the various types of pain encountered in abdominal disease. Today every physician is familiar with the characteristics of pain encountered in appendicitis, renal calculus, cholelithiasis, etc. Actually, a careful history of the pain and associated symptoms in abdominal disease will give sufficient evidence to establish an early diagnosis in a high percentage of the cases. On the other hand, pain which emanates from disease affecting the spinal axis has received considerably less attention on the part of the general medical profession than the pain associated with other diseases. Thus, disease about the spinal canal is often not recognized until late, and after the onset of profound cord changes.

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The pain which accompanies these lesions has in the majority of cases certain definite labelling characteristics: (1) it is usually severe and gripping in character, (2) it invariably follows the anatomic distribution of the spinal root or roots which are affected, (3) it does not radiate into adjacent areas which are not supplied by the affected nerve root, (4) it is often exaggerated by coughing, sneezing, straining or other factors which tend to place the affected root on tension or under abnormal pressure. Thus, the segmental distribution of pain, its character, and the factors which influence it, serve sharply to differentiate it from the pain which emanates from lesions elsewhere in the body, such as the vague referred pain from visceral disease, the pain complained of by those suffering from functional disorders, etc.

In visceral disease the pain is as a rule deep seated and located in the general vicinity of the involved viscus, and the referred pain appears in a minor role and in the body segment from which the viscus had its origin. Pain from regional somatic disease, such as diseases of the sacroiliac joint, is generally local in character and is accompanied by local tenderness; furthermore, it does not show segmental distribution. In functional disorders the pain tends to transgress anatomic limitations, and is often associated with anesthesia of the "glove" or "stocking" type. On the other hand, the true signs of spinal space-occupying lesions may be overlooked or actually obscured by functional elements in susceptible people. This occurs more often following long-standing pain in patients who have gained the impression that they are suspected of complaining unnecessarily.

Space-occupying lesions which most commonly affect the spinal roots fall into four general groups: (1) posterior herniations of the *nucleus pulposus,* (2) neoplasms, (3) infectious granulomata, and (4) suppurative infectious diseases. Patients having neoplasms as a rule seek medical aid early in their course because of pain. The first manifestation of pain is usually that which emanates from a single spinal root. Since neoplasms progressively expand, other roots later become affected, and finally profound cord changes occur; unfortunately, this late stage is too often reached before the diagnosis is made.

Posterior herniations of the *nucleus pulposus*, in contrast to spinal tumors, as a rule do not progressively enlarge; rarely do more than one or two roots become affected, and profound cord changes are the exception. The pain, while similar to the pain in spinal tumors, tends to show exacerbations and remissions. The attacks come on rather suddenly; they are usually associated with some unusual but minor stress to the back, and continue for weeks at a time. In many cases the pain eventually becomes intractable in spite of good management; then neurosurgery offers the only solution to the problem. In the writer's experience these lesions have been found most frequently in the lumbar region, although they do occur elsewhere attention has been called to this fact by Love (1939),[1] Love and Walsh (1940),[2] Spurling and Grantham (1940),[3] Bradford and Spurling (1941),[4] Dandy (1941),[5] and others. These lesions, when in the lumbar region produce the pure clinical type of radicular pain which is often referred to as "sciatica." Therefore, the pain from such lesions should not be confused with the pain referred to the lower extremities from other diseases, such as, prostatic disease, tubo-ovarian disease, arthritis, etc., as is often the case. The pain in the latter conditions is not segmental in distribution; furthermore, it differs in other characteristics.

Granulomata behave very much after the fashion of the neoplasms; however, they can usually be recognized by other laboratory labelling characteristics. In suppurative infections the progress of symptoms is much more rapid. Sensory loss rapidly follows motor paralysis, and there is generally other evidence of infection, such as fever, leucocytosis, etc.

When a single spinal root ceases to function as a result of compression by a space occupying lesion, the alteration of function does not differ from that pointed out by Head (1894),[6] Sherrington (1898),[7] Foerster (1936),[8] and others, i.e., anesthesia does not occur. Actually, there is rarely more than diminution of pain and temperature sensibility in the affected dermatome; other sensory perceptions such as of touch, pressure, vibration, etc., are relatively normal.[9] Furthermore, the tendon reflexes of the muscles supplied by the spinal root may be only slightly diminished since the skeletal muscles are supplied by more than one spinal root. Thus, it becomes clear that space occupying lesions about the spinal canal, early in their course give rise mainly to a characteristic type of pain. Furthermore, very few objective findings are present. On the other hand, these lesions can be recognized early in a high percentage of cases by a careful analysis of the character, quality and distribution of the pain alone.

In the cauda equina, because of the amount of space, lesions may vary greatly in size depending on their location, yet give rise to very few signs except pain. For example, neoplasms may attain a large size yet give rise to no more signs than the much smaller and laterally situated posterior herniations of the *nucleus pulposus*.

Since the character, quality and distribution of pain is the most important single factor leading to the diagnosis of spinal space occupying lesions, the following somewhat unusual cases are reported.

REPORT OF CASES

Case 1. Large tumor of the cauda equina with unilateral "sciatica." Diminished right Achilles' reflex, and slight diminution of pain perception on the outer aspect of the right foot.

The patient, a man of 38 years, was admitted to the hospital January 16, 1939, because of severe pain radiating into the right leg. Five months before, following a minor back strain, the patient had first experienced pain in the low back region. After a few days the pain began to radiate down the posterior aspect of the right leg onto the lateral surface of the foot, and into the little toe. The pain persisted for about six weeks when it suddenly disappeared. After a few days it re-appeared suddenly, and was of the same character and distribution as during the previous attack. Coughing, sneezing, straining at stool, etc., increased the intensity of the pain; actually, the second attack came on suddenly during a violent paroxysm of coughing. According to the patient's description the pain followed a very definite pattern downward on the posterior aspect of the thigh into the leg, heel and lateral surface of the foot and small toe; it did not extend around to the anterior, middle or lateral surfaces of the thigh. There was no history of disturbance of bladder or rectal function. The remainder of the history was essentially unimportant.

Examination showed the patient to be well developed and well nourished. The blood pressure was 120 systolic and 80 diastolic, the pulse averaged 80 beats per minute, and the temperature was 98.2° Fahrenheit. The neurologic and general examinations gave normal findings except for the lower extremities. The right Achilles' tendon reflex was diminished. There was a slight impairment of pain perception over the outer aspect of the ankle, foot and little toe. Temperature sense in this same area was also slightly diminished; other modalities of sensation were normal. Lumbar puncture at the fifth interspace gave clear spinal fluid. Queckenstedt's test gave normal findings; there were two cells, total protein 100 mg., sugar 70 mg.; the Wassermann reaction was negative, and the colloidal gold curve was normal. Roentgenographic studies showed almost a complete obstruction to lipiodol extending from the second lumbar vertebra downward to the fifth lumbar vertebra; however, the obstruction was not complete as evidenced by the fact that part of the lipiodol passed from below to above the lesion.

At operation, January 21, 1939, a large tumor was removed (see fig. 1) measuring 7x1.8x1.9 cm. The tumor actually consisted of an enlargement of one of the roots of the cauda equina (right first sacral), and microscopically had the appearance of a fibroblastoma. The postoperative convalescence was uneventful. The patient was discharged from the hospital on the tenth postoperative day, and returned to his employment as a carpenter on the forty-fifth postoperative day, and has remained well up to the present time.

COMMENT

The importance of pain in the early diagnosis of spinal lesions should here be re-emphasized. As pointed out in the history, pain alone brought this patient under observation. Furthermore, the character and quality of the pain and the factors which influenced it were consistent with those of spinal root origin, and directly led to the diagnosis. Because of the exacerbation and remission of pain in this case, and the history of trivial back injury, the patient was at first suspected of suffering from posterior herniation of the *nucleus pulposus*. On the other hand, because of a dry spinal tap at the fourth lumbar interspace, and not at the fifth lumbar interspace, a lesion larger than a posterior herniation of the *nucleus pulposus* was suspected, thus, lipiodol was introduced.

In spite of the large size which the tumor had attained, it had not as yet enlarged sufficiently to compress the surrounding roots of the cauda equina, and there was, therefore, only evidence of impaired function of the first sacral spinal root, i.e., slight impairment of pain- and temperature-perception in the first sacral dermatome and diminution of the right Achilles' tendon reflex. The appearance of the second attack of pain undoubtedly resulted from downward dislocation of the tumor, and resultant traction on the spinal root by increase of the intraspinal pressure from above downward at the time of the paroxysm of coughing. From the appearance of the specimen the question might be raised as to why Queckenstedt's test was not positive. This can be accounted for by the fact that the tumor, although large, had not yet completely obstructed the cerebrospinal fluid circulation. As long as there is patency in the subarachnoid space equal to, or larger than, the caliber of the lumbar puncture needle, both rise and fall of fluid in the spinal manometer will occur under compression, and release of compression, of the jugular veins.

Had this patient been allowed to wait until more advanced findings of tumor appeared, i.e., bilateral sciatica, paralysis of the extremities, extensive sensory loss, and disturbance of sphincter control, the preoperative disability and postoperative morbidity would have been materially prolonged. Furthermore, when such tumors are allowed to go on to more advanced stages they often leave permanent residual defects in both locomotion and sphincter control even after their removal.

When pain of radicular character and distribution appears and persists in spite of other diseases which are obvious, a thorough investigation of its cause should still be made. The following case further serves to emphasize the reliability of the quality, character and distribution of pain in, not only the diagnosis, but the differential diagnosis as well.

Case 2: Intractable pain radiating into the left leg for two years. Progressive muscular atrophy, upper right arm for two and one-half years. The only related neurologic finding to the "sciatica" was a diminished left Achilles' reflex. Roentgenographic studies showed the characteristic deformity of a posterior herniation of the nucleus pulposus. Operation gave complete relief from pain.

The patient, a boy of twenty years, was admitted to the hospital, November 8, 1938, because of persistent pain radiating from the left hip down the posterior aspect of the left leg for two years.

He stated that two years previously while playing football he received a back injury during practice He stated that he had been "clipped from behind in the small of the back For the following two weeks his back was stiff and painful, after which time he gradually recovered and was able to play football the remainder of the season

About three months later, the stiffness in the back increased and pain began to radiate down the posterior aspect of the left leg He resorted to many kinds of treatment but had been unable to obtain relief On bending forward and then straightening up the pain was markedly intensified Coughing and straining tended to intensify the pain The sphincters had not been affected

The remainder of the history was relatively unimportant except that for the past two and a half years the patient had noticed a slowly developing weakness in the right hand and had noticed that the right hand had become thinner than the left He also noticed, especially about the palm of the hand (thenar and hypothenar eminences), fine fibrillary twitchings beneath the skin Recently during the previous two or three months, he had noticed these twitchings in the biceps triceps, and deltoid muscles of the right arm The past history, except for the usual childhood diseases, was not remarkable The family history also gave no pertinent information

Examination disclosed the patient to be exceptionally well developed and well nourished weight 175 pounds The blood pressure was 115 systolic and 80 diastolic, the pulse averaged 70 beats per minute, and the temperature was 98° Fahrenheit There was atrophy of the interossei muscles of the right hand, the thenar and hypothenar eminences also showed considerable atrophy, and there was atrophy in the muscles of the forearm The biceps and triceps muscles showed fine fibrillary twitchings, likewise, fine fibrillary twitchings were seen in the muscles about the shoulder girdle The left arm and shoulder were not affected No sensory changes in these areas were found and there was no pain complained of except in the low back and left leg In the lower extremities there were no fibrillary twitchings or atrophy The general impression was that the patient was suffering from progressive muscular atrophy involving the right arm, and that the sciatic pain was due to some other cause

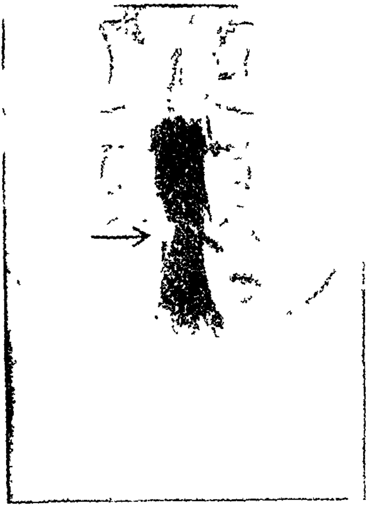
The tendon reflexes in the right arm were absent, in the left arm they were normal The superficial reflexes were all present, and normal The reflexes in the lower extremities were present and normal, except for the diminished left Achilles' tendon reflex Sensory examination gave entirely normal findings Lasègue's sign was positive on the left Lumbar puncture gave clear spinal fluid The Wassermann reaction was negative, cell count 2, total protein 35 mg , sugar 60 mg , colloidal gold curve was normal

l showed a

obliterating

ar root The dural sleeve of the right fifth root and roots above and below filled normally (see fig 2)

At operation, November 15, 1938, a posterolateral herniation of the *nucleus pulposus* was found on the left side (see fig 2), the affected nerve root was identified as the fifth lumbar, it was compressed swollen, and congested The protruding portion of the *nucleus pulposus* was removed and the sensory division of the affected nerve root was sectioned Following operation there was complete relief from pain On the tenth postoperative day the patient was



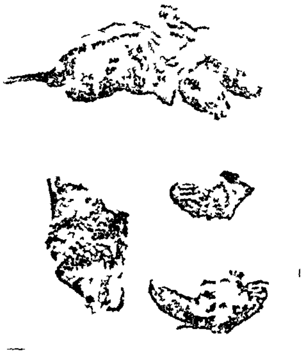


Fig 2 Arrow indicates typical filling defect, demonstrated by roentgenographic lipiodol study, resulting from posterior herniation of the nucleus pulposus Opposite are fragments of nucleus pulposus removed at operation

discharged from the hospital. The following fall he returned to school, and in spite of the progressive muscular atrophy in the right arm played football the next two seasons. When last heard from, some three years after operation, he was still free from low back pain and "sciatica," and there had been only moderate increase in the symptoms of progressive muscular atrophy.

COMMENT

In the case of this patient the symptoms were very similar to the symptoms in the preceding one, i.e., the character and distribution of the pain and physical findings, yet there was a remarkable difference in the size and biologic nature of the two lesions. In the last patient, the true cause of sciatic pain could easily have been overlooked because of the co-existing and antedating evidence of disease of the nervous system. It should, therefore, be emphasized that progressive muscular atrophy does not, as a rule, cause a great amount of pain, and when pain does occur it does not stimulate the pain of spinal root compression. Since the "sciatic" pain in this patient had all the characteristics of a space-occupying spinal root lesion, it was not considered a part of the general picture of progressive muscular atrophy; thus, roentgenographic studies with lipiodol were done, and the final proof was obtained that two independent pathologic processes existed. Thereby it was possible to afford the patient relief from the "sciatica." Actually, surgery could well have been recommended in this case without the confirming lipiodol study because of the characteristic type of pain, its distribution, character, etc. Here, again, the character of the pain led to a diagnosis in spite of an obvious co-existing neurologic disorder.

SUMMARY

1. Space-occupying lesions in the vicinity of the spinal canal as a rule involve, at an early stage, one or more spinal roots, which give rise principally to pain.

2. The early recognition of these lesions is important from three points of view: (1) the preoperative disability can be minimized, (2) the postoperative morbidity reduced, and (3) residual impairment of function can be precluded.

3. Although certain physical findings, depending on the location of the lesion, may appear early, as a rule radicular pain is the first symptom that brings the patient to his physician.

4. The pain from space-occupying lesions about the spinal canal results from either traction or pressure of one or more spinal roots, and has certain definite labelling characteristics which distinguish it from the pain of diseases elsewhere in the body.

5. A careful analysis of the character of the pain will lead to an early diagnosis, treatment, and rapid recovery of the patient in the majority of cases.

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SUMARIO

1. Lesiones que ocupan espacio de la vecindad del canal espinal como regla envuelven, en un estado temprano, una o mas raices espinales, lo cual da lugar principalmente a dolor.

2. El reconocimiento temprano de estas lesiones es desde tres puntos de vista importantes: (1) la inhabilidad

preoperativa puede ser disminuida, (2) la mortalidad postoperatoria reducida, y (3) defectos residuales de función pueden ser preludiados.

3. Aunque ciertos hallazgos físicos, dependientes de la localización de la lesión, pueden aparecer temprano, como *regla dolores radiculares es el primer* síntoma que trae el enfermo a su médico.

4. El dolor de lesiones que ocupan espacio alrededor del canal espinal resultan por tracción o presión de una o mas raices espinales, y tienen cierto sello característico que las distingue de dolores por enfermedades en cualquiera otra parte del cuerpo.

5. Un analisis cuidadoso del caracter del dolor nos llevará a un diagnóstico temprano, tratamiento, y recobramiento rápido del enfermo en la mayoria de los casos.

RÉSUMÉ

1. Les lésions du canal vertebral généralement interessent un ou plusieurs rameaux des nerfs spinaux. Ces lésions sont accompagnées du symptôme douleur.

2. Il est important de reconnaître l'existence de ces lésions pour trois raisons: Afin de 1° diminuer la gêne et l'infirmité pré-opératoires. 2° diminuer, c'est-à-dire, de réduire le degré de morbidité *post-opératoire. 3° de prévenir* toute atteinte permanente de fonction.

3. Certains signes physiques dus au siège de la lésion existent au début. C'est la douleur radiculaire que porte le malade à consulter le médecin.

4. La douleur résultant des lesions occupant le canal vertébral est due à la *traction ou à la compression exercées* sur les rameaux spinaux. Cette douleur a des caractéristiques qui la distinguent du symptôme douleur qui accompagne les troubles d'autres parties du corps

5. Une analyse minutieuse et soigneuse de la nature de cette douleur conduit à un diagnostic précoce, à un traitement approprié et à une guérison rapide dans la grande majorité des cas.

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Tic Douloureux

PARTIAL SECTIONS OF THE SENSORY ROOT OF VARYING EXTENT*

OLAN R. HYNDMAN, B.S., M.D.

A REPORT of my experience with tic douloureux was made in July 1938 in which the cerebellar approach to the sensory root of the fifth nerve was compared to the subtemporal approach from surgical and physiological standpoints.[1] The results obtained after partial sections of the sensory root appeared to be no different whether the root was cut just posterior to the Gasserian ganglion or near the pons. The sensory losses after partial sections were not in agreement with the proposition that each third of the sensory root corresponds with the respective peripheral branch distribution. If the lower half of the root is sectioned, the sensory losses are so mild they are hardly noticed by the patient until they are demonstrated objectively. As the root is cut from below upward the greatest sensory loss is first sustained on the ipselateral half of the tongue, the gums and buccal mucosa. The loss then progresses in the face in a manner that suggests a segmental or concentric arrangement with the mouth as the center rather than an arrangement corresponding to peripheral branch distribution.

The fact that a properly performed partial section of the sensory root will abolish the painful seizures of tic douloureux and yet invoke such minimal sensory losses in the face has advanced the surgical treatment of this pain syndrome to a point that leaves little to be desired. If so little as one-fourth of the upper fibers of the sensory root are spared, corneal sensation will be preserved. The dangers of corneal ulceration or the fitting of guards to protect an anaesthetic cornea should no longer be necessary.

When zones of almost complete sensory loss are sustained by either alcohol injection or root section, it is not uncommon for the patient to develop annoying paraesthesias in the anaesthetic zones. The mechanism of this indescribable sensation, which has been referred to as "Gasserian Ghosts," is not clearly understood. It is conceivable that it may be related to the sympathetic system. In any case the paraesthesia appears to be more prominent in anaesthetic zones and not so prominent in mild to moderately hypaesthetic zones. The paraesthesia appears to differ from marginal hyperaesthesia. The former is experienced by the patient in anaesthetic zones while the latter may be invoked by stimulating the marginal zone that separates the aesthetic from the anaesthetic zones.

Hence, the factors of subjective numbness and "Gasserian Ghosts" present the problem of determining the minimal section that will abolish the painful seizures. Toward this end I have been impressed by the important relationship that so called "trigger zones" bear to the painful seizures. These trigger zones are soon discovered by the patient and are almost always oral or perioral. Not uncommonly one is situated in the region of ala nasi. The most consistent statement given by patients is that eating, chewing, swallowing or talking will provoke the attacks. This suggests that the mouth itself is the chief locus of trigger zones. It is well known that if definite trigger zones are locally anaesthetized the painful seizures will be abolished as long as the anaesthesia lasts and the patient may eat a much needed meal in relative comfort.

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These facts provide a possible explanation for the cure of tic douloureux after partial root section. The sensory losses are greatest in the oral and perioral regions and hence eliminate the trigger zones.

In May, 1941 I[2] reported a case of tic douloureux in which the pain was located only to the right forehead above the eyes. Chewing and talking iniated frequent attacks and the patient felt that stimulation of his gums on the right caused the attacks The lower three-fourths of the sensory root were cut, causing a marked loss of sensibility in the right mouth and on the chin only. The patient has been completely free of painful seizures to the time of writing (19 months).

I thought it would be of value to make a systematic study of partial sections from maximal to minimal sections and the following six cases reveal the results of the studies thus far. The minimal section in this group consists of a section of the lower half of the root. I plan to continue the series by cutting less than half of the root because I feel that many patients can be cured in this way and thus be provided with as ideal a physiological result as is possible.

CASE REPORTS

In the following six cases an attempt was made to vary the degree of partial section in a systematic way and to correlate the result with the degree of section The series progresses from a maximal partial section to one in which only the lower half of the root was cut All exposures were made by the subtemporal route and all sections were made from below upward in the root Taste was unimpaired after operation in all cases for salty, sweet, sour and bitter substances Four of the six patients had had one or more alcohol injections previous to operation and the residual numbness from these procedures contaminated the results of the operation so far as sensory losses are concerned Nevertheless they are instructive in some ways Most patients have experienced alcohol injection before they come for operation.

All of the patients reported here, and in fact all the patients on whom I have operated for tic douloureux, developed herpes of varying extent about the mouth 2 or 3 days after operation

In making the sensory examinations, light touch was tested with a wisp of cheese cloth, pain with a light prick of a pin, temperature with test tubes containing warm and cool water and deep pressure by moderately pressing the end of an applicator stick on the skin All these tests were made by comparing sensation with that on the normal side and usually with the patient's eyes closed In the diagram showing

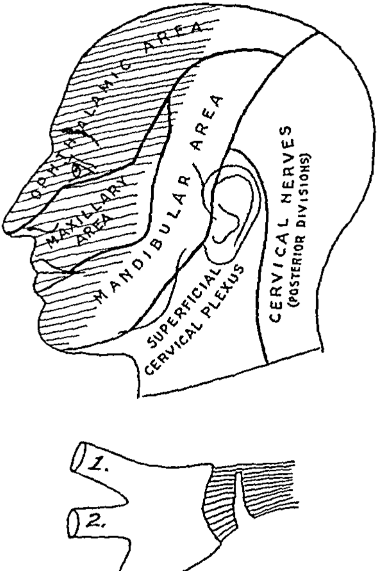

Fig. 1 Results of the examination of Case 1 ten months after operation In the shaded zone as well as for left side of tongue, gums and buccal mucosa sensibility was as follows· light touch, O; pin prick, O, temperature discrimination, O; deep pressure, about 10 per cent of normal Deep pressure was not completely lost at any locus The unshaded zone was normal subjectively and to objective tests The marginal [illegible] only [illegible] of [illegible]

The insert is a diagrammatic representation of the extent of the partial section of the root.

the extent of partial section, the motor root of the nerve has purposely been omitted.

1. N.C., a white woman 54 years of age, described the symptoms of tic douloureux and located the pain anterior to the left ear. Five years ago she experienced tingling sensations in the tongue. Three years later the onset of one of these tingling sensations was followed immediately by an attack of sharp pain in the left face and thereafter the seizures were frequent. An alcohol injection gave relief for 4 months. Another injection gave relief to the present time. She knows only that the injections were made somewhere inside the mouth leaving a residual impairment of sensibilities on the left chin.

She described the excruciating pain as beginning in the left lower jaw and shooting over the entire left face to the top of the head. After the first alcohol injection the left side of the mouth (inside) was numb. When the pain returned, this numbness disappeared. She felt the left side of the tongue was a trigger zone. Eating, talking or jarring the head initiated the attacks.

Following the alcohol injection she developed a burning sensation on the left tongue and inside the mouth and on the left side of the lips which at times felt as if they were on fire. Substances such as mouth washes did not excite this paraesthesia but certain odors did, particularly that of ether.

Operation. On January 29, 1941, a maximal partial section of the sensory root of the fifth nerve was made on the left. Only a small filament was left intact in the upper aspect of the root. It would have been impossible to have cut more without making the section complete. See fig. 1.

Result. The following information was obtained at a check up examination 10 months after operation. She has been entirely free of painful seizures and is very pleased with the result. Subjectively she is conscious that the left side of the tongue and mouth is numb and describes a band of numbness on the left face which corresponds to that depicted in fig. 1. She stated, however, that she was hardly conscious of the numbness until she touched or rubbed the area or put food in the left side of the mouth. The burning sensation which developed in the left mouth and on the lips after alcohol injections was not changed by the operation, but after operation she has experienced ''crawly, tingling, creepy and drawing'' sensations in the anaesthetic zone on the left face. All of this, however, ''bothers her very little'' and is nothing to compare with the original painful seizures.

2. A.C., a white woman, 58 years of age. She described the symptoms of tic douloureux and located the pain to the region of the second division of the fifth nerve on the right. The painful seizures have become more frequent and severe for the past 3 years. She had discovered ''trigger zones'' on the right upper lip and right ala of the nose.

Operation. On February 5, 1941 a partial section of the sensory root of the fifth nerve was made on the right. About twice as many of the upper fibers were left intact as in case 1. It was estimated that about four-fifths of the fibers were cut from below upward. See fig. 2.

Result. The patient has been free of attacks to the time of writing (8 months). At a follow up examination on October 17, 1941 the patient stated that she was greatly pleased with the result. The numbness that she experienced was not a great bother. However, the gums, right side of the tongue and buccal side of the cheek felt dead and swollen and yet these parts and the right lower lip often burned and felt raw as if the skin were absent. Listerine burned these parts ''like fire''. She stated that if a fly or mosquito lit on the hypaesthetic areas of the face she experienced an unusual crawling sensation over the whole right face that was intolerable. The results of the sensory examination are given in fig. 2.

3. B. G., a white woman, 55 years of age. She described the symptoms of tic douloureux and located

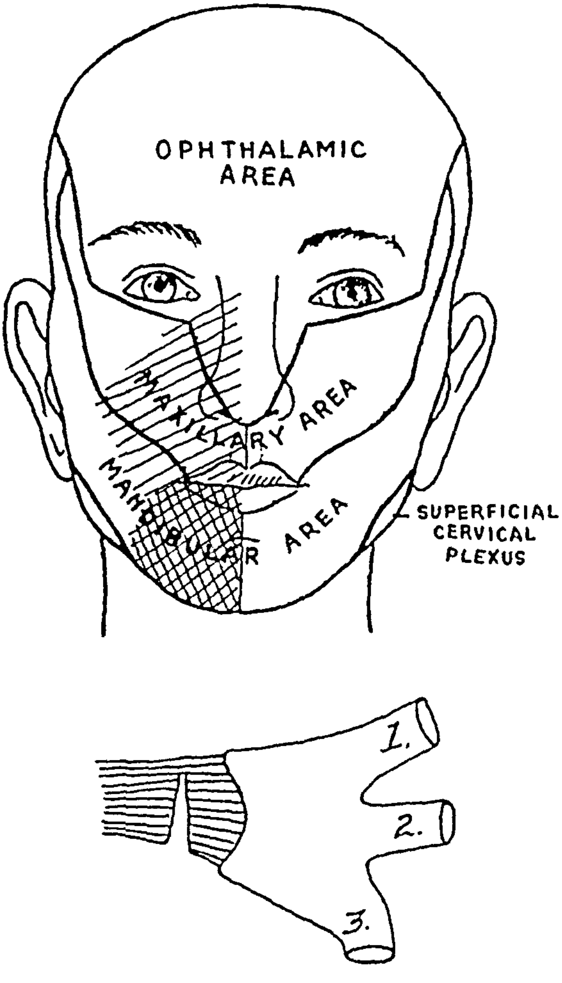

Fig. 2. Results of the examination of Case 2 eight and one-half months after operation. The right half of the tongue, gums, buccal mucosa and double hatched zone on the chin revealed sensibility as follows: light touch, O; pin prick, O; temperature discrimination, O; deep pressure, 25 per cent of normal. When pricking the chin she felt the pin point without pain. The single hatched zone was as follows: light touch, 50%; pin prick, 25%, temperature, 25%; deep pressure 75%. Corneal sensation on the right unimpaired. Motor function of right fifth and seventh nerves unimpaired.

The insert is a diagrammatic representation of the extent of the partial section of the root.

the pain to the left side of the nose and around the left eye There were many seizures each day They were initiated by eating and talking and washing the face

Operation On April 8, 1941 a partial section of the sensory root of the fifth nerve was made on the left An attempt was made to duplicate the section made in case 2 and it was estimated that four fifths of the fibers were cut from below upward See fig 3

Result The patient has been free of attacks to the time of writing (7 months) At a follow up examination on October 23 1941 she stated that the only regions which seemed numb to her were the zone between the nose and left eye and the left eyelids themselves She denied being conscious of numbness elsewhere on the face or in the mouth although she could not sense the presence of food in the left side of the mouth The objective sensory losses are depicted in fig 3 She described an electric like prickling sensation almost constantly present and limited to the zone of objective numbness on the left cheek She volunteered the statement that if a fly lights on this region an intolerable prickly sensation is initiated over the whole zone This paresthesia is also initiated by brushing the hair in the ophthalmic region on the left but the sensation is limited to the zone of numbness on the left cheek While the sensation is unpleasant, it is nothing to compare with the pain of tic douloureux

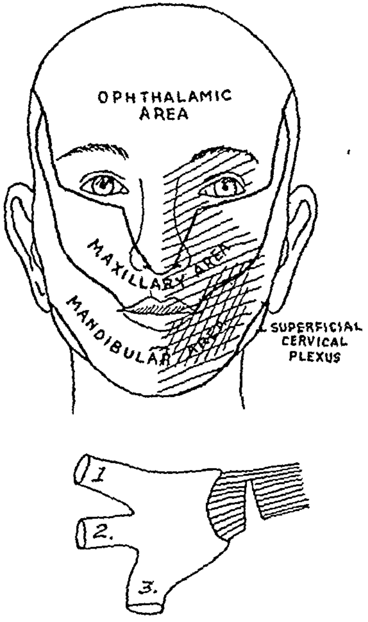

Fig 3 Results of the examination of Case 3 six and one half months after operation The left half of the tongue, gums buccal mucosa and double hatched zone revealed sensibilities as follows light touch, O, pin prick, O The single hatched zone light touch, 50%, pin prick, O temperature discrimination, O Deep pressure was not completely lost at any locus Corneal sensation on the left unimpaired Motor function of the left fifth and seventh nerves unimpaired

The insert is a diagrammatic representation of the extent of partial section of the root

4 P H, a white man 50 years of age, gave a typical description of the pain of tic douloureux which he located to the right side of the nose and right fore head The tic began 10 years ago He has had two or three injections of alcohol a year with relief each time for 3 to 4 months The last injection of the second and third branches was done in May 1940 with relief for almost a year For the past few months the attacks have occurred several times daily and also at night Chewing, and also hot and cold food taken into the mouth, would initiate attacks The residual sensory losses due to the alcohol injection are given in the legend to fig 4

When he brushed his closely cropped hair on the right he stated that he felt a peculiar crawling sensation under the right eye and on the right cheek He was unable to describe it but denied that it was in any way painful

Operation On October 10, 1941 a partial section of the sensory root of the fifth nerve was made on the right An attempt was made to cut the lower three fourths of the root fibers See fig 4

Result The patient made an uneventful recovery and was highly pleased with the result Chewing caused no semblance of the former attacks The results of the examination are given in fig 4 The chief sensory losses due to the operation occurred in the mouth and on the right chin and upper lip The paraesthesia induced by brushing his hair was unchanged

5 O W, a white man 59 years of age described the symptoms of tic douloureux and located the pain as extending from the right angle of the mouth to the vertex of the head The painful seizures began 3½ years ago He soon observed that the right upper lip was a trigger zone so that touching or shaving this region initiated seizures Chewing and talking also started the seizures Three and one-half years ago he had an alcohol injection through the roof of the mouth which gave relief for 2 years One year ago an injection below the right eye gave relief for 3 months and 3 months ago an injection above the eye gave no relief Attacks occur daily

In addition to the tic pain he describes a burning, crawling sensation, constantly present in the numb zone over the right lip and cheek The right half of the tongue, gums and buccal mucosa are not numb

Operation On October 21, 1941 a partial section of the sensory root of the fifth nerve on the right was made As near as could be estimated the lower five-eighths of the sensory fibers were cut—a little more than half but not quite three fourths of the root See fig 5

Result. The patient made an uneventful recovery and stimulation of the trigger zones no longer excites anything simulating the seizures. He states that his face feels only slightly more numb than before operation. The increased numbness is almost entirely in the mouth and on the right chin. The constant paresthesias are the same as before operation. The results of the examination are depicted in fig. 5.

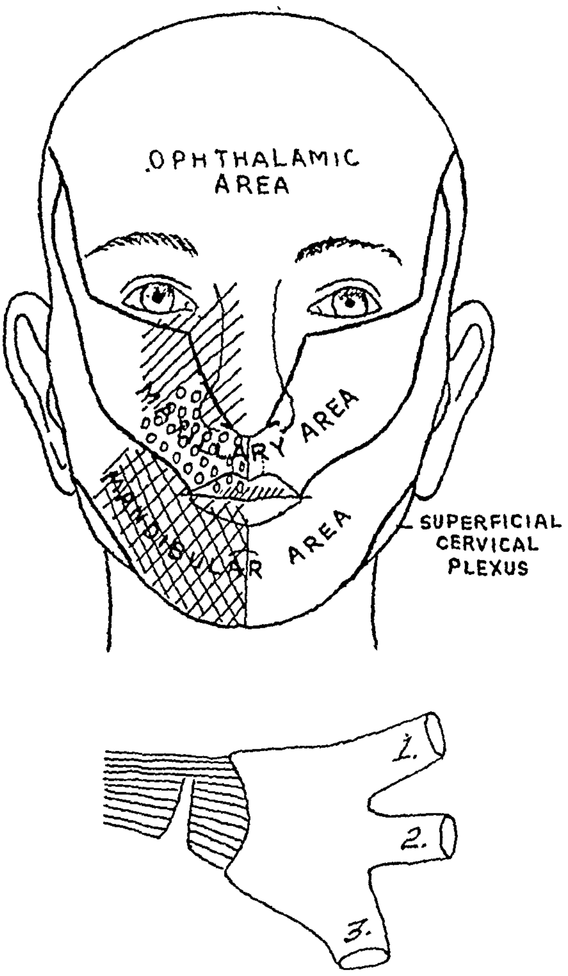

Fig. 4. Results of the examination of Case 4 twelve days after operation. (Before operation the sensory losses were as depicted here except for those on the chin which were very mild. The losses were also very mild, if any, inside the mouth). After operation the sensibilities were as follows: right half of tongue, gums, buccal mucosa and double hatched zone; light touch, O; pin prick, O; temperature discrimination, O. For the zone marked by circles these modalities were about 25% of normal and for the single hatched zone they were about 50% of normal. Deep pressure was not completely lost at any locus.

Corneal sensibility on the right unimpaired. Motor function of the fifth and seventh nerves unimpaired.

The insert is a diagrammatic representation of the extent of the partial section of the root.

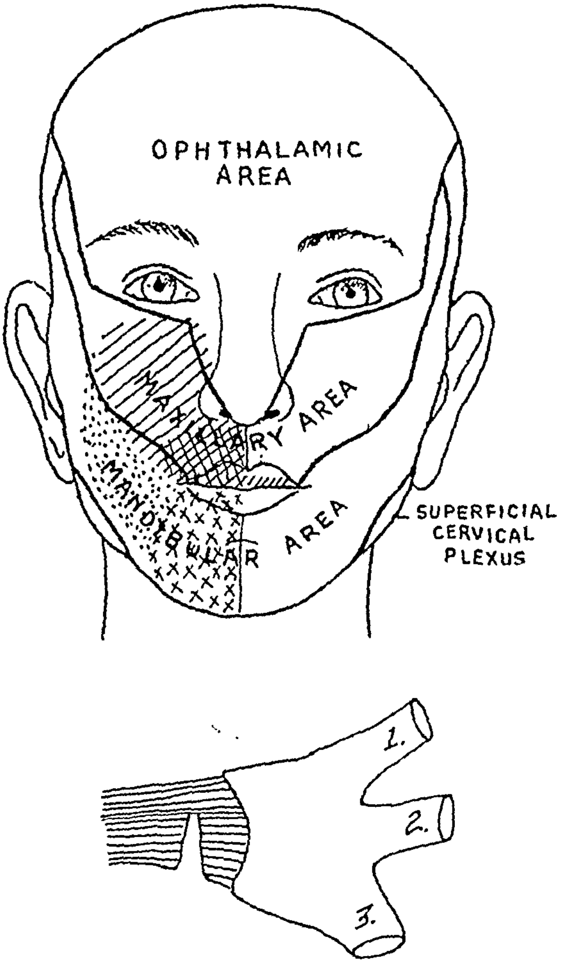

Fig. 5. Results of the examination of Case 5 eight days after operation. Sensibility to light touch, pin prick and temperature was lost on the right half of the tongue, gums, buccal mucosa and zone on chin marked by crosses. These modalities were about 50% of normal on the double hatched zone. In the single hatched zone touch was 90% with pin prick and temperature discrimination about 50%. The stippled zone represents an added margin in which pin prick only was about 50%.

Note. Much of this sensory loss was present before operation. The only additional loss due to the operation that could be detected was that in the mouth and that represented by crosses and the additional loss to pin prick represented by the stippled zone.

Corneal sensation unimpaired on the right. Motor function of the fifth and seventh nerves on the right unimpaired.

The insert is a diagrammatic representation of the extent of the partial section of the root.

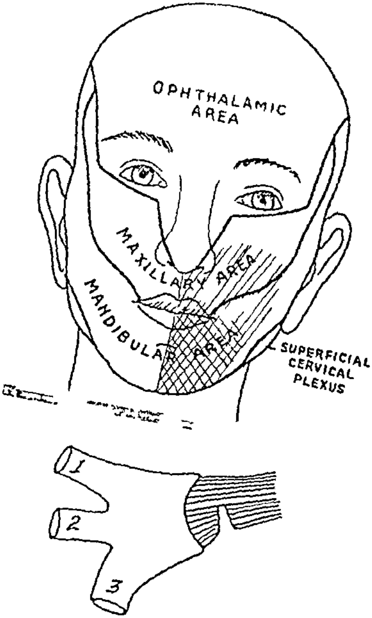

Fig 6 Results of the examination of Case 6 eight days after operation If one eliminates the region above the left upper lip, then the shaded zone represents the area of hypæsthesia before operation in which light touch and pin prick was about 50% of normal Before operation the left side of the tongue, gums and buccal mucosa were not numb subjectively or to objective tests

After operation the left half of the tongue, gums, buccal mucosa and double hatched zone represents sensibilities as follows light touch, O, pin prick, O Single hatched zone light touch, 50%, pin prick, O Temperature discrimination was impaired in this case in a much wider zone than other sensibilities She could hardly discriminate heat on the left forehead and under the eye as well as on the hatched areas She could discriminate cold only a little better than heat Deep pressure was not lost in any locus

Corneal sensation on the left unimpaired Motor function of the fifth nerve on the left was impaired as before operation Motor function of the seventh nerve unimpaired

The insert is a diagrammatic representation of the extent of the partial section of the root

6 C J, a white woman 46 years of age describes the typical pain of tic douloureux in the left face The attacks began 4 years ago An alcohol injection at that time (second and third branches) gave relief for six months Following this there were numerous injections, the last being one year ago She now describes the pain as being located on the left face from chin to forehead Many attacks occur daily Chewing, talking, swallowing water, excitement and washing the face provoke the attacks The residual hypæsthesia from the alcohol injections is given in

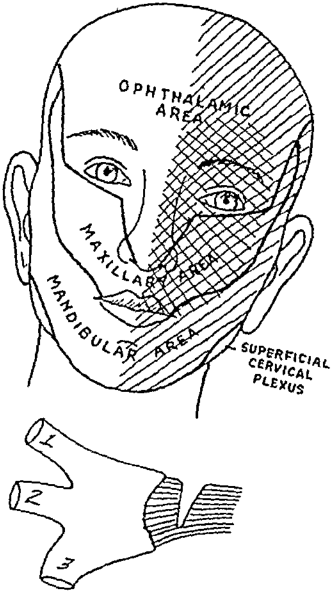

Fig 7 Results of examination of G E, a case of post herpetic neuralgia Sensibility in the single hatched zone was as follows light touch, O to 10%, pin prick, O to 10%, temperature discrimination, O In the double hatched zone light touch, 50% preserved, pin prick, 50% preserved, temperature discrimination O Sensibility on left half of tongue, gums and buccal mucosa diminished little, if any On another examination sensation on the chin was recorded as, light touch, 75%, and pin prick, 0 to 20%

Corneal sensation was 50% of normal on the left The insert is a diagrammatic representation of the extent of partial section the legend to fig. 6. The motor function of the fifth nerve was impaired on the left.

Operation. On October 24, 1941 a partial section of the left sensory root was made. It was estimated that the lower half of the root was cut. See fig. 6.

Result. The patient made an uneventful recovery and lost all semblance of the former pain. Rubbing and washing the face, chewing and swallowing could be done with complete comfort. The results of the examination are given in fig. 6.

DISCUSSION

1. The nature of tic douloureux and the important role played by "trigger zones."

The results which I have obtained by controlled partial sections have strongly convinced me of the important relation of certain sensitive or "trigger" zones to the painful seizures, for it appears that sensibility of these zones must be intact in order to initiate the seizures. The trigger zones are predominantly oral and less often perioral. Hence movements of the mouth such as in chewing, swallowing and talking are almost uniformly given by the patient as initiating factors. The idea that the stomadeum is a necessary locus of these strange trigger zones correlates strikingly with the fact that the tic douloureux type of pain occurs no where else in the body other than in the distribution of the fifth and ninth cranial nerves. The importance of the trigger zones suggests, but not conclusively, that the basic or casual lesion of the syndrome is at their locus. The fact that tic douloureux is predominantly a unilateral syndrome greatly weakens this suggestion. The basic cause as well as the anatomical location of the lesion remains to be satisfactorily proved.

I have come to regard the syndrome of tic douloureux as one for which some pathologic physiology of the fifth nerve as a whole is responsible and to which the sensory integrity of the stomadeum is necessary. This point of view differs somewhat from the traditional one that implicates the peripheral branches of the fifth nerve separately. Most of my patients have described the pain in such a way as to indicate that it overlapped the distribution of the peripheral branches.

2. The pattern of sensory losses after partial section of the sensory root of the fifth nerve.

In this series of cases as well as in that previously reported[1] the results are not in keeping with the proposition that the thirds of the sensory root correspond with the respective peripheral branches of the fifth nerve. As the root is cut from the inferior fibers upward, the greatest sensory losses occur first in the mouth, and on the lips and chin on the same side. As the section progresses, the sensory losses progress not only from below upward but from the mid-sagittal plane lateralward. If only one-tenth to one-fifth of the superior fibers are left, a considerable zone of normal sensibility is retained on the entire face laterally as demonstrated particularly in case 1. The question immediately arises as to what the results would be if the roots were cut in such a way as to leave only a small bundle of the lower fibers. I have made such a partial section in only one case. The patient G.E. was reported in 1939.[3] He was a white man, 74 years of age, who complained severely of post-herpetic neuralgia in the left ophthalmic distribution. I made a partial section of the left sensory root of the fifth nerve in such a way as to leave about the lower one-fifth of its fibers. I stated in the previous publication that Doctor Clarence Van Epps found considerable sensation to be preserved on the forehead and cheek. These findings were so incredible to me at the time that I thought they did not represent somatic sensibility. I saw the patient again one year later and was fully convinced that the residual was somatic sensibility The patient has since died of natural causes but I feel it worth while to report a diagram representing the results of the examination after the partial root section See fig 7 While the findings in this patient are not the exact reverse of those when only a small amount of the ophthalmic fibers are left, they are reasonably so and indicate the wide distribution subserved by a few root fibers

3 *What proportion of the root should be cut to abolish the pain of tic douloureux?*

If the hypothesis concerning oral trigger zones as given here continues to prove valid for all or most cases, then no doubt the minimal section that will substantially dull the oral sensibilities would suffice I am convinced that the section should never have to be as great as in the first three cases I am equally convinced that the lower fibers of the root should be cut and it is probable that a section of the lower half or a little less may prove to be sufficient for most cases

CONCLUSIONS

1 Oral trigger zones appear to play a very important role in the initiation of the painful seizures of tic douloureux Therefore partial sections of the sensory root of the fifth nerve should be designed so as to dull or abolish oral sensibilities

2 Intraoral sensation of fifth nerve distribution is supplied by the lower fibers of the sensory root just posterior to the ganglion and hence partial sections should be done from below upward in the root

3 Minimal sections should be the objective so as to obtain the best physiologic results and at the present writing it appears that a section of no more than the lower half of the root would suffice to abolish the pain of tic douloureux in most cases

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SUMARIO

1 La zona oral de gatillo parece jugar un papel muy importante en la iniciación del ataque doloroso del tic douloureux Por lo tanto sección parcial de la raíz sensoria del quinto nervio debe diseñarse para amortizar o eliminar la sensibilidad oral

2 Sensación intraoral de la distribución del quinto nervio se debe a las fibras bajas de la raíz sesitiva porteriore al ganglio y por lo tanto la sección debe de ser de abajo hacia arriba de la raíz

3 Sección mínima debe de ser el objetivo para obtener los mejores resultados fisiológicos, y al presente tiempo de éste escrito parece ser que la sección de no mas de las fibras inferiores de la raiz son sufisiente para eliminar el dolor del tic douloureux en la mayoria de los casos

RÉSUMÉ

1 Des certaines zones détentrices orales jouent une rôle important dans l'initiation des accès de douleur dans cette affection Il en résulte que la section partielle de la racine sensorielle du cinquième nerf attenue ou abolit les phénomènes douloureux de la région orale

2 La sensation intraorale due à la distribution du cinquième nerf est fournie par les fibres inférieures de la racine sensitive situées en arrière du ganglion Les sections partielles de ces fibres doivent être faites de bas en haut

3 Les sections minimales obtiennent les meilleurs résultats physiologiques La section de la moitié inférieure de la racine suffit dans la plupart des cas á abolir la douleur qui accompagne le tic douloureux

Reducing the Operative Mortality of Intracranial Tumors*

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THE neurosurgeon is reminded almost daily by his professional brethren that his mortality for operations around the brain necessarily must be huge. Many neurosurgeons, unfortunately, have this same attitude toward their work and seldom trouble themselves to check up on their operative results. There is nothing that will stimulate the surgeon to work harder and more carefully than a critical statistical review of the cases he has operated on. "Statistics can be made to prove anything" is a statement as true as it is trite but to the surgeon himself his review can result only in untold benefit to himself and his patients. He owes it to himself, his profession and his patients to frequently take a sampling from his surgical cases. Naturally, it is impossible to make careful detailed studies of all those he operates on, but at least he can study a certain percentage of them from the standpoint of a particular problem, which will give him an idea of the trend the problem is taking.

In a recent statistical analysis covering two general hospitals (University of Colorado and Denver General Hospitals) over a period of five years, I found my case mortality for operations for intracranial tumors had been 8%. This included only fifty-five operations on fifty patients, but it is sufficient to give an accurate index of my probable mortality in the other hospitals in which I work, a detailed study of which is being undertaken at the present time. In every instance a major craniotomy was performed by a bone flap operation (if a supratentorial tumor) or by rongeuring out a hole (if in the posterior fossa); the tumor was found and either completely or partially removed. Considered as operative deaths were those occurring during the postoperative hospital stay, *no matter how long that* period might have been.

This study forced me to make an analysis of why even four cases out of fifty should die following a brain tumor operation. In this group of fifty cases, fifty-five operations were performed. There were four hospital deaths giving a mortality of 8% and an operative mortality of 7.2%.

TABULATION OF CASES

Type of Tumor	No. of Tumors	Percent of Tumors	Deaths	Operations
Meningioma	8	16	0	10
Glioma	26	52	3	28
Metastatic Malignancies	4	8	1	4
Craniopharyngioma ..	1	2	0	1
Pituitary Adenoma ..	2	4	0	2
Acoustic Nerve Tumor.	4	8	0	5
Colloid Cyst	1	2	0	1
Perithelioma	1	2	0	1
Granuloma	1	2	0	1
Angioma	2	4	0	2
TOTAL	50	100%	4	55

Operative Mortality—7.27%
Case Mortality—8%

An analysis of the four fatal cases gives this interesting information:

CASE 1 was a huge, recurring glioblastoma multiforme involving the right occipital lobe and extending into the right parietal lobe. It was planned to remove the right hemisphere entirely, but on exposure it was deemed advisable to try to save the face and arm centers. The dissection was carried down very near to the midline and even then it was not entirely removed. The patient died several days later from postoperative edema aggravated by tumor infiltration into the midline structures.

Comment. Operative mortality could have been avoided by acknowledging defeat when the histological nature of the tumor had been determined On the other hand extensive resection of the mass offered the only hope to the patient Again it was impossible to estimate the depth of the tumor without proceeding with its radical removal

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*Presented at the Third International Assembly of the International College of Surgeons held in Mexico City, August, 1941.

Case 2 was that of a tumor one inch in diameter located in the right f ce center and on the surface It was removed without difficulty and it was recognized as a malignant nodule with other similar lesions in the brain Death occurred one week later from signs of general cerebral edema Autopsy showed two other nodules not more than one inch in diameter in the opposite cerebral hemisphere Each had massive areas of edema about them which involved almost the entire brain structure The tumor proved to be a metastatic hypernephroma On several other occasions I have seen extensive swelling around hypernephroma nodules similar to that seen in this case and it would seem to be a characteristic reaction to this type of growth

Comment It is difficult to see how a mortality could have been avoided in this case as the primary growth and lung metastasis were too small to be diagnosed

Case 3 was a medulloblastoma loosely entwined about the brain stem of a three year old child It came away so easily that I was encouraged to attempt its complete removal More than half of it was removed without hemorrhage although it was an extremely tedious procedure The operation was discontinued to be completed at another time Death occurred twenty four hours later Autopsy showed no metastasis and that its complete removal would have been possible

Comment A mortality could have been avoided in this case by not attempting to remove a tumor of this type Most neurosurgeons are satisfied by verifying these lesions at operation and following with x ray therapy This would have been a better plan to have followed in this case

Case 4 was a deeply infiltrating glioblastoma multiforme of the left frontal lobe and corpus callosum which had produced a swelling of the midline structures Only tissue for a biopsy was removed The patient was stuporous and in bad general condition prior to the operation and I probably now would consider her too sick for surgery

Comment This case can definitely be credited to poor preoperative judgment

Harvey Cushing, in 1922, reported an operative mortality of 16 9%, later, in 1930, of 6 8% Little or nothing has been said about operative mortality in removing intracranial tumors since With all of our past experience and new methods of diagnosis and improvement of surgical technic, an 8% mortality is still too high How can the risk be lessened to the point where we can assure the sufferer from an intracranial tumor that "If we can do him no good, at least we will do him no harm"

Neurosurgery, as a specialty, may be said to have been born through the combined studies of Harvey Cushing[1] at the Johns Hopkins Hospital and Charles Harrison Frazier at the University of Pennsylvania Sporadic attempts at the removal of intracranial tumors prior to their time were only futile, hopeless efforts resulting in a prohibitive mortality The discovery of air as a contrast medium for the diagnosis and localization of intracranial lesions by Walter Dandy[2] of the Johns Hopkins Hospital added to and made secure the position of surgery of the nervous system among the specialties

The clinical diagnosis of surgical lesions of the cranial cavity at the present time is as accurate as the clinical diagnosis of deep seated lesions in any other part of the body Precision of the neurological diagnosis, with its fortification by means of x ray of the skull with air inside of the cerebrospinal fluid bearing spaces, has made the exact localization prior to operation a thing of unquestioned accuracy Therefore the surgical approach as to location at the present time is a matter of precision probably equaled by the localization of no other deep seated disorder in the human body

For a successfully accomplished operation the fundamental principles of general surgery must be applied in neurosurgery to the utmost degree of meticulous care These are—the prevention and restoration of hemorrhage, the avoidance of sepsis and tissue trauma and safety in anesthesia To the skilful handling of these four essential problems must be added accuracy in the diagnosis, care as to the preoperative, operative and postoperative details and last, but not least, that great unmeasureable, intangible thing commonly referred to as surgical judgment

Hemorrhage is largely prevented by placing the patient during the operation in as nearly the erect posture as it is possible so as to eliminate venous congestion in the parts to be operated on. Infiltration of the surface structures by normal salt solution with adrenalin will further prevent bleeding. The skilful use of a suction apparatus will so clear the operative field when hemorrhage has occurred as to make the bleeding point visible for its control by the electro-coagulator. This machine is indispensable when arresting hemorrhage in intracranial operations and its use has reduced shock and bleeding to a minimum. Silver clips formerly used for this purpose have been almost entirely displaced by the use of the electro-coagulating machine. Bleeding causes shock, shock is prevented by restoring blood to the patient as it is lost. This is facilitated by the preoperative placing of an intravenous needle or cannula of such size that the transfused blood (citrated) can flow readily into the patient's vascular system with the same speed that it is leaving through the cut vessels. Never should a patient's blood pressure be permitted to drop below a systolic of 90. Blood must be kept on hand in anticipation of its use.

Sepsis occurs from three sources: systemic infection, contamination from the respiratory tracts of the patient or operating room personnel, and from unsterile dressings, instruments and suture materials. Systemic infection is avoided by close attention to the eradication of grossly infected foci prior to the operative procedure. Necrotic teeth and infected tonsils are to be removed before the operation wherever practicable. Vagrant organisms in the blood stream will localize themselves and multiply in surgically damaged tissues. Avoidance of sepsis from contaminating skin organisms is prevented by scrupulously cleaning the skin. It is quite probable that a skin well cleansed with soap and water will suffice to prevent infection in a surgical wound but the test of time has shown that germicidal agents added to this preparation are unquestionably more efficacious in preventing operative infection. Germs from the respiratory tracts of the patient, operating personnel, and spectators—spread by talking, coughing and sneezing—are probably the most common cause for operative infection following surgery in previously uninfected wounds. The certain sterilization of instruments, drapes and dressings is no longer a problem. In clean surgery, sutures of silk have proven their superiority over catgut.

The avoidance of tissue trauma is of greater importance in brain surgery than in surgery of any other part of the body. Delicate tissues must be handled in removing tumors, for example, from off an optic nerve, medulla oblongata or from the pineal, third ventricle, or hypothalmic regions. Yet it is a common experience for the neurosurgeon to remove large tumors from these locations with little damage to them and in most instances their function is restored by the removal. It is here that profound judgment and the greatest skill are necessary in order to estimate the trauma the tissue will stand and to prevent irreparable damage to vital parts.

The anesthetic must be one with which the anesthetist and the surgeon are fully familiar. The simplest forms of anesthesia—such as a solution of novocaine or general ether anesthesia with th ether drop method—are to be preferre except in the hands of the very expert Local anesthesia is probably the safest but with a non-cooperative patient i may be the most dangerous; so it i necessary that the temperament of th patient be evaluated before attemptin to perform a major operation under it

Of the general anesthetics, it is prob-

The Therapy of the Neurogenic Bladder*

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THE proper treatment of disturbances in bladder function and the consequent upper urinary tract pathology resulting from diseases or injuries of the central nervous system is of paramount importance to these unfortunate patients. In fact the length of life of those surviving the immediate effect of severe and permanent spinal cord injury is to a large extent determined by the type of care accorded the paralyzed urinary tract. Sequelae such as stone formation, cystitis, ascending pyelitis, pyelonephritis, renal insufficiency and finally death from uremia are all too frequently observed. Serious urosepsis delays or prevents completely the restoration of partial bladder function, the so-called automatic or reflex bladder. Head and Riddoch have shown also that prolonged severe urosepsis is associated with general degenerative changes in the central nervous system. From these facts it is evident that the prevention of serious infection in the paralyzed urinary tract is of prime importance.

This fear of urosepsis gave rise to a school headed by Young and composed largely of urologists with considerable war experience, which condemned instrumentation for the relief of the overdistended paralyzed bladder. Since alarming overdistension results neither in spontaneous rupture of the bladder nor urinary suppression, many cases have been managed in this manner. Unfortunately, mere refusal to instrument these patients is no guarantee against infection of the urinary tract, for like all other patients who carry residual urine they will ultimately develop infection due to urinary stasis alone.

Stimulated by additional knowledge of normal and disturbed bladder physiology obtained by cystometric examinations, as well as by the discovery of new and amazingly effective urinary antiseptics, we have treated a large number of patients with acute traumatic myelitis, using various forms of early bladder drainage with results in many ways superior to those treated by the "hands off" policy.

Cystometry enables one to study the behavior of the urinary bladder during artificial filling. A record of bladder pressure together with a simultaneous record of certain subjective phenomena constitutes the cystometrogram. Cystometry, while not absolutely essential, is invaluable in the diagnosis and treatment of the neurogenic bladder. It is of value in differentiating the general level and extent of lesions which interrupt either the motor or sensory side of the pathways concerned in bladder function. It is equally valuable in checking the progess of the patient under treatment. However, careful clinical observation plus the frequent use of the catheter to determine the presence and amount of residual urine can be substituted for the cystometer.

A number of methods for studying

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bladder pressure have been devised. Personally we feel that a continuous recording type of instrument such as that devised by Landes and Voris and by Lewis is essential.

Since the surgeon most frequently meets with disturbances of bladder function of neurologic origin in cases of injury to the spinal cord or cauda equina and since the need for adequate treatment at the onset is very great, we shall consider this problem first.

Following an acute injury of the spinal cord or cauda equina, there is a period of inactivity of the bladder as far as reflex activity is concerned. This has been referred to by Munro, Nesbit and Gordon, and McLellan as the stage of the acute atonic neurogenic bladder. It is recognized clinically by a gradually increasing distension of the bladder which may reach the level of the xyphoid before more or less continuous urinary dribbling occurs. This overflow incontinence is delayed until the resting level of pressure in the bladder reaches a point sufficient to overcome the slight tone maintained by the external sphincter. Voris and Landes have shown by cystometric studies that in a very short time these bladders regain sufficient tone so that during progressive filling with successive fifty cc. increments of fluid there is a succession of step-like peaks and new resting levels with additional injections, each higher than its predecessor. They noted the similarity of the cystometrogram in these patients to that obtained in patients under spinal anesthesia and considered that it represented a true stretch reflex, due to a pathologic failure of the musculature of the bladder to accommodate itself to filling.

Of great importance is the high resting level of pressure that was noted in these bladders after the injection of several hundred cubic centimeters of fluid (Fig. 1). This level of pressure averages about forty mm. of mercury. Obviously, if the bladder is allowed to over-distend after an acute transverse lesion of the spinal cord or cauda equina, the kidneys are forced to secrete against a tremendous back pressure. Ureteral peristalsis protects the upper tract to some extent from back pressure effects, but in serious spinal cord injury the effectiveness of the uretero-vesical valves as well as normal ureteral movements are seriously disturbed. The remarkable adaptability of the normal bladder to accommodate itself to filling with only a very slight rise in pressure, the highly competent uretero-vesical valves, and normal ureteral peristalsis

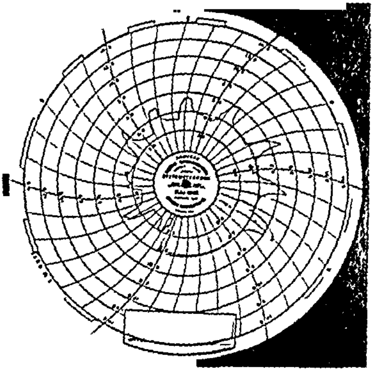

Fig 1 Cystometrogram of a patient with an acute transverse lesion of the thoracic portion of the spinal cord. Note the failure of the bladder pressure to return to the base line after each increment of filling and the step like rise in pressure following each injection A total of 500 cc of fluid was injected and after that a level of about 10 mm (mercury) of pressure was maintained

As in all the cystometrograms shown, the period of injection of each 50 cc. of fluid, the desire to void (when present), and the period of voiding are indicated on the margin of the tracing Each radial line denotes a period of ten seconds The concentric circles indicate pressure expressed in millimeters of mercury are all designed to protect the kidneys against sudden changes in intrapelvic pressure. The normal pressure in the kidney pelvis is very slight and sudden elevation of this pressure which sometimes takes place during retrograde pyelography will cause the kidney to stop secreting urine for many hours. Likewise, the deleterious effect on renal function of all the mechanical obstructions to urination have long been recognized by urologists. These facts alone should be ample reason for providing some form of bladder drainage immediately after an acute injury to the spinal cord or cauda equina.

Another cogent reason for providing bladder drainage in these patients with acute spinal cord injury is the increased nursing care that an overflow incontinence entails. Furthermore, even with the most frequent changes of bed linen it is almost impossible to keep these patients dry and consequently the development of bed sores, such a serious complication in these patients, is promoted.

TYPES OF BLADDER DRAINAGE

Three types of bladder drainage because of their simplicity and ready availability may be considered in the management of acute retention resulting from traumatic myelitis. They are interval catheterization, and continuous drainage either by indwelling urethral catheter or by the suprapubic catheter.

One cannot overemphasize the importance of employing the most rigid aseptic technic in instrumenting these patients. Any type of catheterization is a surgical procedure and should be done with full regard for asepsis and the avoidance of trauma. The anterior urethra of the male is the habitat of numerous organisms which if carried into the paralyzed bladder by an instrument may cause a serious acute urosepsis. Copious irrigation of the anterior urethra with a mild antiseptic such as 1-4000 potassium permanganate just prior to catheterization should be a routine procedure. Likewise, the catheter should be handled with sterile forceps.

The most meticulous care will not completely eliminate infection in these patients. It can, however, be controlled in most cases by the judicious use of the newer urinary antiseptics. Routine urine cultures will establish the type of organism present and aid in the selection of the appropriate urinary antiseptic. Sulfathiazole has proved to be particularly effective against the staphloccus, and mandelic acid preparations in a highly acid urine will generally control infections due to the colon group of organisms. Proteus infections are particularly serious because their urea-splitting property renders the urine so alkaline that bladder ulcerations, incrustations, and phosphatic bladder calculi are frequent complications. Most of the urinary antiseptics so far developed are ineffectual against these organisms. Frequent lavage of the bladder with 0.5% phosphoric acid is the most effective treatment.

If the paralyzed bladder is to be treated by drainage, which we believe to be the method of choice, it should be instituted early, before the bladder has become greatly over-distended. Overstretching of the paralyzed detrusor muscle may injure it still further, and the disturbed circulation produced by over-distension predisposes the bladder to early and severe infection.

Intermittent catheterization. It can at once be said that intermittent catheterization is unsatisfactory. Not only is it time consuming and exacting if bladder distension is to be avoided, but it also multiplies the possibilities of infecting the bladder. Since the bladder is emptied only periodically, there is most of the time a partially filled reservoir of infected urine under more or less pressure.

Constant drainage. Constant drainage, on the other hand, keeps the bladder empty at all times. It not only reduces the number of instrumentations to a minimum, but it also keeps intravesical tension at zero, and thus protects the upper urinary tract from back pressure and minimizes the possibility of infection from reflux of infected urine from the bladder into the kidney pelves. It also keeps the paralyzed bladder small and at rest and provides for efficient lavage of the viscus.

The choice then lies between urethral and suprapubic retention catheter drainage. The urethral catheter, if properly cared for, may be worn indefinitely. A No. 18 to 22 F., double eye, hollow tip catheter should be passed so that its tip projects not more than 2 cm. inside the bladder. A small quantity of injected fluid will return promptly if the catheter is properly placed. The catheter should be held in by adhesive tape and it should be removed, sterilized and the urethra thoroughly irrigated twice a week. It is best to perform bilateral ligation of the *vas deferens* at the time of the initial installation of the indwelling catheter to prevent possible development of epididymitis. This latter complication is rare however, even in cases where the precaution of ligation of the *vas* is not carried out.

Drainage by suprapubic catheter, although a surgical procedure, has certain advantages over the urethral retention catheter. Where suitable instruments and operative facilities are available, we regard it as the method of choice. It may be done according to the Thorburn technic. A five cm. median incision, its lower extremity at the symphysis, is carried down to the bladder. With the bladder filled to 500 cc. or more, the peritoneal reflexion will be out of danger. An ordinary forceps held closed, is passed through the bladder wall and then the blades are supported just enough to permit the introduction of a self-retaining suprapubic tube stretched on a long probe. When the forceps is removed and the probe withdrawn, the tube will be tightly gripped by the bladder wall and the junction will be watertight. A still simpler method requiring no skin incision is that devised by Duffy. His special trochar permits the easy introduction of a No. 24 F. winged catheter through the abdominal wall and into the distended bladder with a resulting watertight junction.

This latter method, in our opinion, is the simplest and most effective method of draining the paralyzed bladder. Some form of closed irrigation and constant drainage apparatus should be used. Fig. 2 (a) is a diagram of an apparatus that provides for continuous drainage of the bladder and intermittent irrigation with a mild antiseptic. A Foley catheter is used, the dilated bag serving to retain the catheter in the bladder. This type of catheter is especially desirable for women. The entire apparatus is assembled and sterilized as a unit. It is our practice to change the indwelling catheter every five days. At this time the catheter is removed and the entire assembly is cleaned and resterilized before reinsertion of the catheter.

Fig. 2 (b) illustrates an apparatus for constant irrigation as well as constant drainage of the bladder. An Alcock catheter is used in this set-up which is also assembled and sterilized as a unit. The air-inlet of the reservoir as shown in the diagram is connected to the air-outlet of the drainage bottle. Landes has found this addition to the original apparatus to be of value in cases of obstruction to the lower urinary tract because if either channel of the catheter becomes blocked, inflow of fluid into the bladder stops; this can at once be recognized by glancing at the Murphy drip bulb. It is obvious that a slight positive pressure will develop into this closed system because the volume of the irrigating fluid is increased by the addition to it of the urinary output. This positive pressure in the system if not released by momentary removal of the stopper from the drainage bottle, will interfere with the emptying of the bladder through the out flow tube and the bladder will distend. It is necessary to carry out this equalization of pressure every two or three hours. In cases of neurogenic bladder disturbance there is little likelihood of the catheter becoming clogged and consequently this connection is usually omitted, thus simplifying the apparatus.

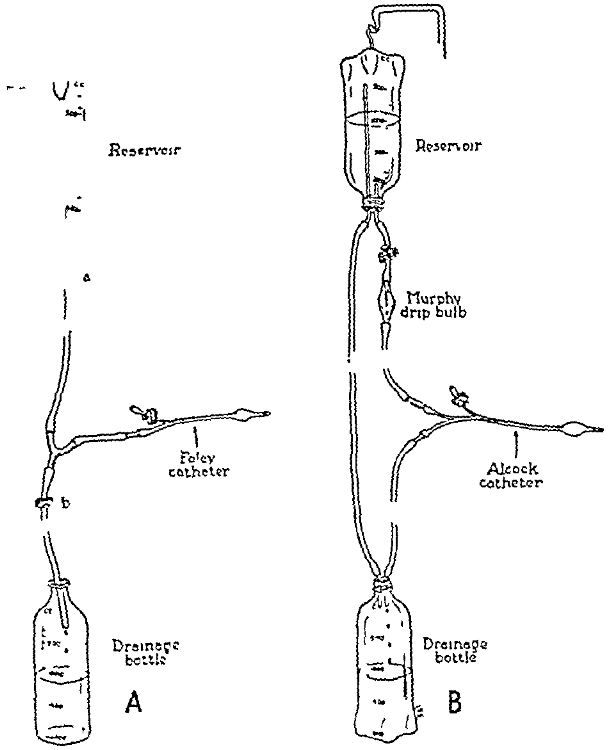

Fig. 2. (a) Diagram of apparatus for continuous drainage and intermittent irrigation of the bladder. The upper clamp (a) is normally closed while the lower clamp (b) is kept open When it is desired to irrigate the bladder (b) is closed and (a) is opened until 100 cc of fluid have run into the bladder Then (a) is again closed and (b) opened which completes the process until irrigation is again necessary

(b) Diagram of apparatus for continuous irrigation and drainage of the bladder The flow of the irrigating fluid is regulated by the clamp above the Murphy drip bulb Periodic (every two to three hours) opening of the drainage bottle to equalize pressure is necessary

Munro has advocated the use of "tidal drainage" in these patients. This apparatus provides an intermittent irrigation with automatic filling and emptying of the bladder. It is somewhat complicated and requires closer and more intelligent supervision than either of the two methods previously described. Advocates of this apparatus claim that it hastens the appearance of reflex activity in the bladder. Since this is primarily a function of reflex centers in the sacral spinal cord it is difficult to see how "passive exercise" of the bladder musculature can have much effect in this direction. In our experience the apparatus pictured in Fig. 2 (b) is much simpler than Munro's and is more satisfactory.

After a variable interval of time, usually several weeks or more, reflex activity of the bladder appears and in favorable cases a so-called automatic or reflex bladder develops. This may occur more rapidly in incomplete lesions of the spinal cord. The general condition of the patient with freedom from urinary sepsis, trophic ulcers and so on is of great importance in promoting its development. By means of frequent cystometrograms, it is possible to record the various stages of the development of reflex activity, beginning with the earliest small weak irregular contractions. From a practical standpoint the classification of the various stages is hardly worthwhile; in fact, there are many individual variations which are difficult to fit into any rigid scheme. The important thing to ascertain is the point at which the reflex contractions occur regularly with a known degree of filling, and are forceful enough to either completely empty the bladder or leave only a small amount of residual urine (less than fifty cc.). At this time catheter drainage, whether urethral or suprapubic, can be discontinued. This stage is that described by McLellan and Nesbit and Gordon as the "reflex neurogenic bladder."

Unfortunately, both physician and patient are usually still disappointed at this stage. Nursing care is complicated because of frequent involuntary voiding of urine. The capacity of these bladders is usually 150 cc. or less; Voris and Landes have pointed out the physiologic reasons why a greater capacity cannot be expected. Male patients can of course wear some form of urinal; such devices are much less satisfactory for the female patient.

Reflex or automatic micturition in these patients is often associated with the mass reflex but is not actually part of it, as Holmes, and later Langsworthy, showed. Denny-Brown and Robertson demonstrated that reflex micturition may be initiated directly by stimulation of cutaneous areas innervated by the sacral segments. If patients can learn to do this they may be able to control the emptying of their bladder and avoid the use of a urinal, at least during the waking hours.

Lesions of the sacral cord or of the cauda equina or both (involving the second, third, and fourth sacral segment or their roots) give, in the acute stages, the same clinical and cystometric picture as lesions in the spinal cord above the sacral level. The end result of such lesions has been termed the autonomous neurogenic bladder by Munro, Nesbit and Gordon and McLellan. Reflex activity is slower to develop and the height of the pressure developed during bladder contractions is less. The parasympathetic preganglionic motor neuron, with its cell of origin in the gray matter of the second, third and fourth sacral segments, has been cut off from the postganglionic neuron in the bladder wall or the mural ganglia, and the reflex activity that does develop is due to the activity of the latter neuron; hence the term autonomous. Voris and Landes emphasized an outstanding characteristic of the cystometrograms (Fig. 3) in these cases. It is the tendency of the bladder after partial filling to show a series of irregular, arrhythmic, small, poorly-sustained contractions. This phenomenon is diagnostic of such lesions.

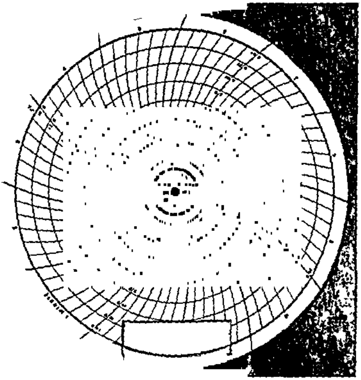

Fig. 3. Cystometrogram of a patient with a long standing lesion of the cauda equina. This tracing was made after the injection of 125 cc. of fluid into the bladder. The small, irregular, arrhythmic, poorly-sustained bladder contractions characteristic of a chronic lesion of the cauda equina are well shown.

The management of the bladder in acute cases of injury to the sacral portion of the spinal cord or the cauda equina is the same as for injuries at higher levels. Since neurologic disability is not so complete in these cases, many patients become more or less ambulant even before reflex activity is regained in the bladder. Straining plus manual suprapubic pressure enables many of these patients (if cooperative) to empty their bladders even if the bladder contractions themselves are inadequate. Constant drainage by urethral catheter or suprapubic cystotomy must be maintained until the patient can empty his bladder leaving a residual of less than 50 cc.

TRUE ATONIC NEUROGENIC BLADDER

We have already pointed out that the so-called "atonic" bladder following acute transverse lesions of the spinal cord is not truly atonic. There is, however, a true atonic neurogenic bladder. It is seen characteristically in tabes dorsalis and inconstantly in a number of other neurologic conditions as pernicious anemia (sub-acute combined degeneration), multiple sclerosis, syringomyelia, etc. In fully developed cases with even 1000 cc. of filling (Fig. 4) there is no rise in bladder pressure and no sign of bladder contraction. In some cases there is considerable discomfort with overdistension, in others there is merely consciousness of bladder distension.

Obviously in these patients there is loss of the normal emptying reflex of the bladder and marked impairment of sensation. The loss of reflex contractions is due in part—if not in whole—to reduction of afferent impulses from the bladder wall. These are not necessarily impulses that reach consciousness, for reflex contractions can and do occur when the sacral segments of the cord are cut off from higher levels. On the other hand, with acute lesions of the lower dorsal or lumbar portions of the cord, the patient may be conscious of distension of the bladder but have no sign of bladder contractions.

Since there is no increase in bladder pressure during filling in these patients, the kidneys do not have to work against any back pressure and artificial drainage is not so imperative. Dilatation of the upper tract when seen in these patients is due to chronic infection rather than to back pressure. When these patients are ambulatory, either a urinal or periodic emptying of the bladder by abdominal straining is often satisfactory. In bedridden patients catheter drainage or suprapubic cystotomy may be necessary. Such patients should never be treated with intermittent catheterization, since in the intervals between catheterization the retained urine acts as an excellent culture medium for bacteria. We have found that a satisfactory bedside urinal can be devised for the male by slipping an ordinary condom partially over the penis and sealing it at the base with adhesive tape. The end of the condom is opened and a rubber drainage tube is slipped inside and the condom strapped tightly around the tube with adhesive or cellulose tape. The drainage tube is led to the waste bottle beneath the bed. This device obviates the necessity for urethral or suprapubic drainage since it keeps the patient dry. It should be changed every few days and the penis thoroughly cleansed. In the female patient urethral or suprapubic drainage may not be necessary.

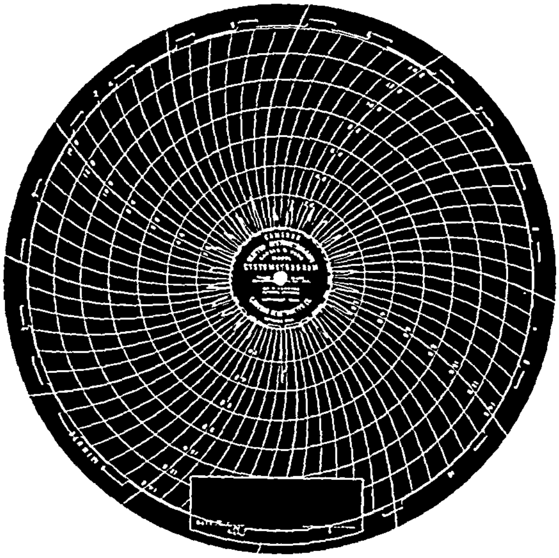

Fig. 4. Cystometrogram of a patient with tabes dorsalis. No bladder contraction and no rise in the resting level of intra-vesical pressure was noted with even 1000 cc. of filling. During the final minute of the tracing no fluid was injected, but the effect on bladder pressure of first, a cough and second, voluntary straining are shown on the tracing.

As a result of lack, or the loss, of normal cerebral inhibition of bladder contractions as seen in many neurologic conditions (e g multiple sclerosis, subacute combined degeneration, cord tumors, cerebral arteriosclerosis, cerebral vascular accidents, brain tumors, cerebral trauma, etc) the patient may show more or less urgency both day and night with precipitate micturition and perhaps enuresis The cystometrogram in these patients is typical whether the cause is functional or organic (Fig 5) The desire to void appears at about the usual time, viz , 150 250 cc of filling However, a bladder contraction appears at this point or with another 50 to 100 cc of filling This is in contrast to the normal where a bladder contraction will not occur until 350 500 cc of filling This of course explains the urgency and the precipitate voiding or enuresis if such are present Urgency is the chief indication for treatment These bladders are seldom infected and they empty themselves very satisfactorily Severe cases of this type correspond both clinically and cystometrically to the reflex bladder that develops after complete transverse lesions of the spinal cord; the milder cases more or less approach this While the end result is the same, the manner of development is diametrically different in the two types of patient

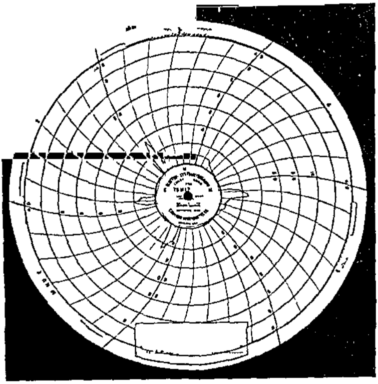

Fig 5 Cystometrogram of a patient with a glioma of the right temporal lobe After 150 cc of filling there was a weak bladder contraction with voiding about the catheter Another 50 cc injection again produced a weak bladder contraction with voiding

Treatment is symptomatic with tincture of belladonna, ten to fifteen drops four times daily as advised by McLellan and restriction of fluids after 4 00 P M. to prevent enuresis Severe cases may require a urinal to prevent soiling In bedridden patients the device previously referred to may be used for the male. Large absorbent perineal pads best solve the problem in the female

SUMMARY

1. The rational treatment of the neurogenic bladder has been neglected in the past, yet there is no other factor so essential to the health or comfort of these patients

2 Cystometric studies are of great value in the diagnosis and management of the neurogenic bladder but if a cystometer is not available, careful clinical observation plus the use of the catheter to determine residual urine, enable the physician to manage these patients adequately

3 Following an acute transverse lesion of the spinal cord or cauda equina, the bladder is not completely atonic but develops a considerable pressure during filling In the authors' opinion, such bladders should be drained with the indwelling of suprapubic catheter.

4 The atonic bladder of tabes dorsalis develops little or no intravesical pressure and consequently constant drainage is not necessary unless the bladder contents are infected

5 Bladders that are uninhibited and empty themselves precipitately do not require constant drainage

the patient dry and this can be accomplished usually with some form of urinal. Suprapubic drainage is never indicated in these patients as they will void intermittently through the urethra in spite of the presence of the suprapubic catheter.

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SUMARIO

1. El tratamiento racional de la vejiga neurogénica ha sido descuidado en el pasado, y aun no hay otro factor tan esencial para la salud y bienestar de estos enfermós.

2. Estudios sistométricos son de gran valor en el diagnóstico y tratamiento de la vejiga neurogénica, pero si un sistómetro no está al aleance, observación clínica cuidadosa mas el uso de un catreter para determinar el orine residual, ayudará el médico a atender el enfermo adecuadamente.

3. Siguiendo una lesión aguda tranversa de la médula espinal o cauda equina, la vejiga no queda completamente atónica, pero desarrolla una presión considerable al llenarse. Es la opinion del autor que tales vejigas deben de drenarse con un cateter permanente o suprapubico.

4. La vejiga atónica de la tabes dorsalis desrrolla poca o ninguna presión intravesical y por lo tanto drenage constante no es necesario al menos que su contenido se infecte.

5. Vejigas que no estan inhibidas y se y se vacian precipitadamente no requieren drenaje constante excepto cuando se quiere sostener el enfermo seco lo que se puede hacer usualmente con algun tipo de orinal. Drenaje suprapubico no es indicado en éste típo de enfermos porque ellos orinan intermitentemente a través de la uretra aunque tengan el cateter suprapúbico.

RÉSUMÉ

1. Le traitement rationnel de la vessie neurogénique a été négligé dans le passé; pourtant, il n'y a pas de facteur aussi essentiel au confort et au bien-être de ces malades.

2. L'étude cystométrique est d'une grande valeur pour le diagnostic et le traitement de la vessie neurogénique. Si un cystomètre n'est pas à la portie du médecin l'observation clinique et en plus l'emploi de la sonde à demeure pour se renseigner sur l'urine résiduelle permettrant au praticien d'instituer un traitement adequat.

3. Après une lésion transverse aigué de la moelle épinière ou de la queue de cheval, la vessie n'est pas complètement atonique, et elle développe une pression considérable durant son remplissage. D'après l'auteur, dans les cas de cette nature le drainage de la vessie doit être entretenu ou par la sonde à demeure ou par une sonde introduite dans un meat créé dans la région supra-pubique.

4. La vessie atonique du tabès dorsalis développe peu ou pas de pression intravésicale; il en résulte que le drainage n'est pas nécessaire dans ces cas. Une exception sera faite si la vessie ou son contenu sont infectés.

5. Les vessies qui se vident précipitamment ne demandent pas le drainage

constant. Dans ces cas, le port d'un urinal approprié suffit. Le drainage suprapubique n'est jamais indiqué chez ces malades car ils urineront par la voie urethrale malgré la présence d'une sonde suprapubique.

Honorary Fellowship in the **International College of Surgeons** has been conferred upon **Professor Nicolai N. Burdenko,** Chief Surgeon of the Russian Armies.

The recipient of this honorary fellowship was born in 1878 in Nizhni Lomov, Penza Province. During the Russo-Japanese War of 1904, he served in the front lines tending the wounded, for which he was awarded the Cross of St. George. He studied with I. P. Pavlov, and chose surgery for his life work. During the first World War he worked in the fields of shock, treatment of skull wounds, and injuries to the nervous system. In 1923, Burdenko was appointed Professor of the first Moscow State University where he carried on research on blood transfusion, surgery of the lungs, anesthesia, and operations on the nervous system. He was founder of the science of neurosurgery in the Soviet Union, occupying a place there comparable to that of Harvey Cushing in the United States.

Professor Burdenko is the author of numerous works on surgery of the liver, the pancreas, the lungs, the stomach, and the nervous system. He is a member of the Academy of Sciences of the U.S.S.R.; Chairman of the Scientific Council of the Commissariat of Public Health; President of the All-Union Association of Surgeons and editor of a number of scientific magazines.

He has been elected a Deputy to the R.S.F.S.R.'s Supreme Soviet as well as to the Federal Parliament. For his work on surgery of the nervous system, Burdenko received the highest government awards.

Intracranial Aneurysms of the Internal Carotid Artery and Its Branches*

WALLACE B. HAMBY, M.D.

PRIOR to the development of modern neurological surgery, which permits the antmortem differentiation of many obscure intracranial lesions, intracranial aneurysms were considered extremely rare, almost impossible to diagnose and, therefore, almost hopeless as to treatment. During the last fifty years the clinical picture has become more sharply defined and successful treatment more frequently effected. As in the case of other intracranial neoplasms, knowledge of the peculiarities of aneurysms within the cranium has increased until they no longer can be considered as a whole but must be differentiated clinically as to site and state of progression. Recently many excellent papers have outlined their clinical vagaries and have furnished guide posts pointing to their recognition, so no attempt will be made here to consider the subject exhaustively. Attention is drawn to the various types, of which a few examples are recorded.

Mr. Geoffrey Jefferson[11] has elaborated upon Edwin Bramwell's clinical classification to produce an excellent grouping according to the location of the lesion, exclusive of arteriovenous aneurysms of the internal carotid artery within the cavernous sinus.

I. *Apoplectic type* (producing subarachnoid hemorrhage without localization).

II. *Paralytic type.*

1. Aneurysms with paralysis of cranial nerves, usually the third.
2. Saccular (non-fistulous) aneurysms of the internal carotid artery within the cavernous sinus.
3. Basal aneurysms with affection of the visual pathways.

I. APOPLECTIC TYPE:

Sudden rupture of a small "berry aneurysm" of one of the component branches of the Circle of Willis produces a clinical drama that usually makes the diagnosis evident. The patient, usually a young adult, suddenly is seized with severe prostrating headache that may be accompanied by unconsciousness. Well marked signs of shock usually are present. On regaining consciousness the patient complains of excruciating pain, perhaps starting behind the eye, but rapidly spreading to the suboccipital region, producing nuchal rigidity and perhaps opisthotonos. The tendon reflexes at first are abolished but later may become hyperactive, with signs of meningeal irritation. This clinical course merits the performance of a spinal puncture, which confirms the diagnosis. The fluid is bloody and is under increased pressure. If the bleeding does not cease the patient eventually expires. If the leakage of blood ceases, the signs clear and the patient may be considered to have recovered, only later to have a fresh hemorrhage that may be fatal. While the prognosis in this type of case must be guarded, the evaluation of large series of cases[16] shows that it is better than had been believed formerly.

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[*] The University of Buffalo School of Medicine and The Buffalo General Hospital, Buffalo, N. Y.

CASE 1 Mr T U (134 874), a powerfully built, thirty two year old man was admitted to the Buffalo General Hospital on 7 1 '40 On 6 27 '40, while swinging a large sledge hammer, he had suddenly felt faint and had a shocking bifrontal headache with loss of vision for fifteen or twenty minutes He was not unconscious but vomited three or four times He was taken to his home where he remained in bed with severe headache until admitted to the hospital On examination the patient was drowsy and appeared acutely ill The neck was flaccid The pupils were contracted and the corneal reflexes were absent The deep and superficial reflexes were abolished The neurologic examination otherwise was normal The B P was 180/105 A lumbar puncture revealed heavily bloody fluid under pressure of 600 mm of water

Diagnosis was made of spontaneous subarachnoid hemorrhage, probably of aneurysmal origin Lumbar puncture was repeated daily with gradual clearing of fluid, fall in pressure and relief of symptoms The reflexes returned and no localizing signs were found X rays of the skull were normal, the pineal gland was visualized in the midline The patient was discharged on 7 14 '40, to be kept under a regimen of restricted activity

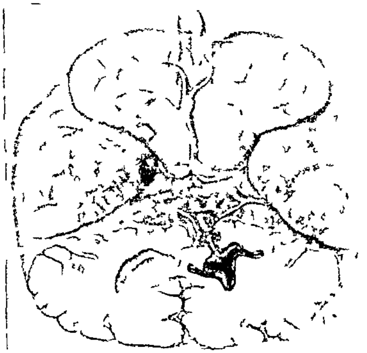

Fig 1 Case 1 *Aneurysm of right anterior cerebral artery with leptomeningeal hemorrhage and rupture into the right lateral ventricle*

Two months later the patient suddenly fell unconscious and died Post mortem examination (Fig 1) revealed distinct atheromatous changes in both anterior cerebral arteries with a ‘‘hazel nut’’ sized aneurysm about 4 cm anterior to the anterior communicating artery with rupture into the brain substance at the medial surface of the right frontal lobe about 3 5 cm behind the pole and with very marked older hemorrhagic softening of the brain tissue behind this The entire leptomeninges in this neighborhood showed marked hemosiderosis The hemorrhagic softening had perforated the floor of the anterior horn of the left lateral ventricle There was old hemorrhagic softening of the entire fornix The ventricles contained a complete cast of recently clotted blood There was marked recent swelling of the brain with distinct flattening of all gyri

Comment This case rather typically demonstrates the clinical course of a case of spontaneous subarachnoid hemorrhage originating in a small aneurysm on the anterior cerebral artery The lesions may develop in congenitally weak vessel walls even in youth or in association with arteriorsclerosis in older patients The associated hypertension in this case made a recurrence likely

II PARALYTIC TYPE

1 *Aneurysms with paralysis of cranial nerves* A nonleaking lesion of this category may simulate intracranial neoplasm so closely that its true nature is disclosed only at the operating table A leaking one may simulate idiopathic subarachnoid hemorrhage except that isolated paralysis of a cranial nerve, perhaps mere dilatation of a pupil, may indicate its location If the hemorrhage recurs and the location of the lesion can be determined clinically or by cerebral arteriography, attempt may be made to isolate the lesion by ‘‘trapping’’ it between silver clips at craniotomy Accumulating reports in the literature prove that this may be successful; the author has not yet accomplished this The report of an unsuccessful attempt will illustrate the characteristics of this group of cases

CASE 2 Mr R M, (138 539) a forty five year old clerk was admitted to the Buffalo General Hospital on 12 9 '40 While walking to church on 11 31 '40 he suddenly ‘‘felt something snap’’ in his head and had severe headache tinnitus vertigo blurred vision and neck rigidity He was not unconscious and managed to walk home where he remained not completely confined to bed Four days later the headache increased and he began vomiting severely Pain radiated down the back to the sacrum and down both legs

On examination the cranial nerves were normal The left tendon reflexes were hyperactive and Babinski's sign was present on the left The B P was 182/112 Lumbar puncture revealed bloody fluid under increased pressure

With daily spinal punctures the spinal fluid pressure gradually fell the fluid cleared and the signs and symptoms cleared up The patient was discharged by ambulance on 12 23 '40 As he was being carried into his home the symptoms suddenly recurred and he was brought back to the hospital Lumbar puncture revealed fresh hemorrhage Under treatment as before the signs of meningeal irritation gradually cleared On 12 29 '40 he complained of severe pain over the right orbit, then developed [illegible] dilata tion of the right pupil and a lag in all the eye movements. Fresh blood again appeared in the spinal fluid. Autohemotherapy was instituted. The fluid again cleared but he developed ptosis of the right lid, dilatation of the right pupil and fixation, protrusion and tenderness of the right eyeball.

Hemorrhages were recurring frequently and clinical signs now indicated the location of the lesion at or near the point of entry of the right internal carotid artery into the skull. On 1-7-'41 the chiasm was explored. A very thin walled aneurysm was found to arise from the junction of the internal carotid with the posterior cerebral artery. The lesion ruptured during exploration. Silver clips were placed on the internal carotid artery above and below the lesion and on the posterior cerebral artery just behind it, controlling the bleeding. This collapsed the lesion which then was coagulated by electrocautery and was surrounded by muscle packs. The patient never regained consciousness; he gradually developed complete left hemiplegia and expired five days after operation.

Post mortem examination revealed evidence of recent but no fresh subarachnoid hemorrhage. There was marked softening without hemorrhage, in the area supplied by the middle cerebral artery, including the entire internal capsule, globus pallidus and anterior part of the optic thalamus. The right hemisphere was swollen. Atherosclerosis was found in several of the cerebral arteries.

Comment: In retrospect, one may conclude that a more favorable outcome might have been obtained had the patient been subjected to a period of digital ompression of the carotid artery and ligation of the artery in the neck prior to craniotomy. At the time, the patient's condition seemed so critically balanced that it was not deemed wise to subject the walls of the aneurysm to the "internal massage" that carotid compression would have produced. This decision was strengthened by the fact that the bleeding recurred spontaneously with the patient absolutely quiet.

2. *Saccular aneurysms of the internal carotid artery within the cavernous sinus.* After it enters the skull, the carotid artery (Fig. 2) makes an S shaped course within the cavernous sinus. It is in relation here to a number of important nerves within a very restricted space and its dilatation produces the "cavernous sinus syndrome." This has been called the syndrome of Foix, who described it in 1922[8], but as Jefferson[11] stated, it was described earlier by Bartholow[2] in 1872 and by Stopford in 1917. The syndrome was described by Adams[1] in 1869, but its diagnostic significance was not stressed at that time. The relation of various parts of the artery to its neighboring nerves allows the cavernous sinus syndrome to be divided into three parts. Jefferson's article[11] listed several examples of each type.

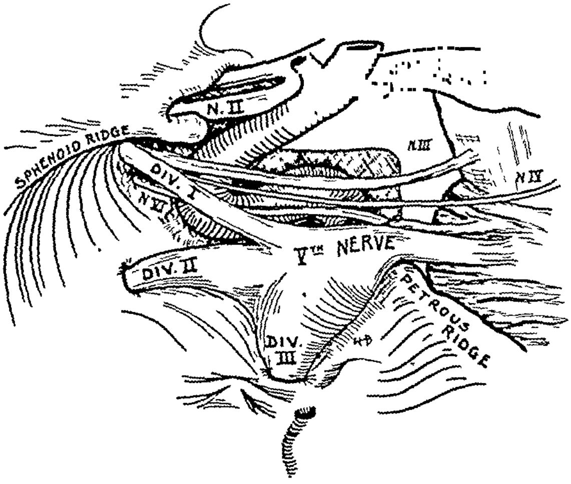

Fig. 2. Relations of the internal carotid artery within the cavernous sinus.

A. *Posterior cavernous syndrome:* Here the aneurysm presses upon the sensory and perhaps the motor root of the trigeminal nerve, producing pain and hypesthesia of the entire face. Ipsolateral ophthalmoplegia may be complete or may be confined to the sixth nerve alone.

B. *Middle cavernous syndrome:* Pressure of the aneurysm on the ophthalmic and maxillary branches of the fifth nerve is associated with paralysis of one or all of the nerves to the extra ocular muscles.

C. *Anterior cavernous syndrome:* Here the ophthalmic branch of the fifth nerve alone is involved. The third nerve, or all of the nerves to the extra ocular muscles are paretic. In addition to the evidences of cranial nerve compression, the patient may display nonpulsating exophthalmos, with chemosis of the conjunctiva and engorgement of the retinal and conjunctival veins. This occurs if dilatation of the artery produces rapid occlusion of the cavernous sinus, obstructing venous drainage of the orbit. Exophthal-

Post mortem examination (Fig. 4) revealed a 4 cm. aneurysm of the left internal carotid artery within the cavernous sinus and a 2.5 cm. aneurysm of the right. Both optic nerves were atrophic from pressure of the aneurysms. The branches of the left fifth nerve were tightly adherent to the aneurysmal wall. There was typical pressure atrophy of the basal and medial gyri of both temporal lobes. Both lungs showed grayish hypostatic pneumonia.

DIAGNOSIS

The signs and symptoms produced by these lesions in various locations have been considered. Although one of our patients was luetic, syphilis is found in no greater percentage of patients suffering intracranial aneurysm than in the general population. If the onset is accompanied by subarachnoid hemorrhage, the nature of the lesion is apparent immediately. If the lesion does not leak, the abrupt onset of symptoms and signs should put one on guard. In some patients the progress may be slow and indistinguishable from that of a neoplasm.

Trigeminal Phenomena. Pressure of cavernous sinus aneurysms of the internal carotid artery upon the trigeminal root, ganglion and branches, usually produces pain that is more or less constant, often with acute exacerbations, usually less severe than that of trigeminal neuralgia. The pain is accompanied by sensory impairment in the domain of the compressed trigeminal division. In one of my cases, the pain was typical of tic douloureux and an injection of the division was made for its relief. The nature of the lesion was not suspected until sellar erosion was demonstrated by roentgenography. It is helpful to compress the carotid artery digitally in these cases; the trigeminal pain due to the pressure of an aneurysm usually is relieved while the aneurysm is obliterated. The application of this simple test is demonstrated in Case 3.

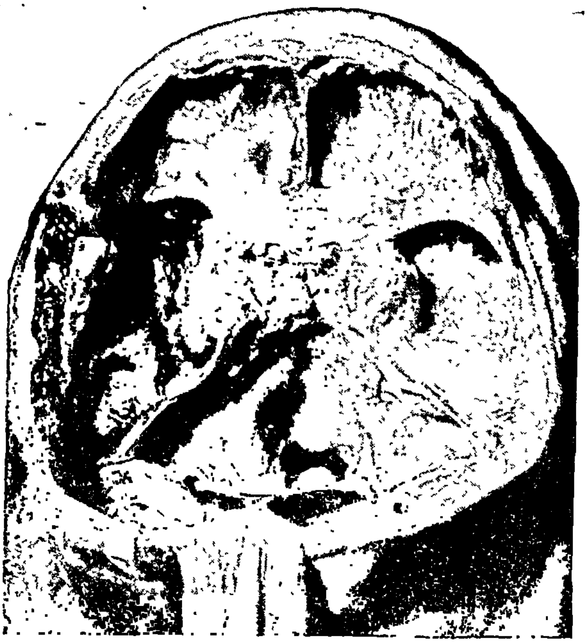

Fig. 4. Case 4, Bilateral aneurysms of the internal carotid arteries.

Roentgenography. The roentgen diagnosis of intracranial aneurysm depends upon: (a) opacities in the wall of the lesion, (b) erosions of the contiguous bone, and (c) arteriography.

(a) Rupture and stretching of the normal arterial tunics, with subsequent connective tissue repair often is associated with deposition of calcium salts. These deposits may consist of scattered, small plaques beside the sella or in extensive deposits that allow the whole dome of the lesion to be visualized (Fig. 3). The small scattered plaques may simulate the calcium contained in the walls of craniopharyngiomas, unless they can be lateralized beside the sella. If the lesion has produced visual field defects also suggestive of craniopharyngioma, the difficulty in diagnosis is obvious. Fortunately this coincidence is of rare occurrence. The deposition of sufficient calcium to allow roentgenographic visualization depends upon the age of the lesion.

(b) Erosion of the contiguous bone appears most commonly as destruction of the sella turcica. While the sellar erosion may simulate that due to pituitary adenomas, this is not often a matter of confusion, although Bozzoli[4] stated that arteriography is the only means of differentiating the etiology of sellar erosion. The erosion due to aneurysm is usually confined to one side of the sella with a tendency toward elevation or destruction of the anterior clinoid process. The tip of the petrous ridge may be eroded as seen in the Towne position. Lesions in the anterior portion of the cavernous sinus frequently erode the sphenoidal fissure and the lower and outer portion of the optic canal.

(c) Cerebral arteriography: The roentgenographic visualization of the intracranial portion of the internal carotid artery and its branches during their injection with contrast media as devised by Moniz[15], offers a means of precise diagnosis of these lesions. Matas[12] hailed its conclusiveness. Dandy[6] raised the question as to whether a negative test would exclude an aneurysm from consideration, since partial thrombosis of the content might prevent the development of the typical picture. Angiography probably will furnish the best clue as to the precise localization and operability of aneurysms of the Circle of Willis.

TREATMENT

Reports[16] concerning survival periods testify that some patients may live for years with various disabilities, but active intervention usually is advisable. The treatment depends upon the location of the lesion. A subclinoid aneurysm within the cavernous sinus usually responds to ligation of the internal carotid artery in the neck. Since sudden occlusion of the artery may result in massive hemispheric ischemia, it is advisable to attempt to promote the development of adequate collateral circulation above the point of occlusion by preliminary graduated digital compression of the artery in the neck. When the patient can tolerate without symptoms occlusion of the artery for fifteen to thirty minutes, it probably is safe to ligate the artery. In some patients who tolerate compression poorly and whose condition precludes long delay, it is safer first to ligate the common carotid artery. This permits reverse flow of blood from the external into the internal carotid to continue cerebral circulation. After further digital compression proves it safe, the internal carotid can be ligated. In one patient[9] with arteriovenous aneurysm, it was possible to ligate both internal carotid arteries without damage to the patient by carrying out these stage ligations. When the lesion projects into the cavernous sinus and leaks into the subarachnoid space, ligation of the artery in the neck will not always be sufficient. Dandy[5] has shown that the internal carotid artery may be closed with a silver clip above the cavernous sinus and below the intracranial branches, "trapping" the aneurysm from the circulation. Werner, Blakemore and King[18] cured a large aneurysm at this site that did not respond to carotid ligation by "wiring" and electro-coagulation.

Leaking intracranial aneurysms that can be localized clinically or by arteriography should be cured surgically if possible, since fatal recurrence is always a sword hanging over the patient's head. Cure may be effected simply by ligation of the internal carotid artery within the neck, as Walsh[17] reported. This may not suffice, however, and visualization of the lesion by craniotomy becomes necessary. If the lesion has a pedicle, this may be occluded with a silver clip, as in Dandy's case[5]. If the lesion is on one of the communicating arteries, the vessel may be clipped on each side of the aneurysm, thus occluding it, as Fincher[7] recorded. Before operation one cannot be sure that the carotid is not involved in the lesion and that carotid occlusion will not be necessary, as in our case 2. This makes it advisable to "condition" the circulation by progressive digital compression prior to surgery, so that if carotid occlusion is found necessary it will be less hazardous.

Nonsurgical treatment of unlocalized intracranial aneurysms will not be considered here although reference may be made to the excellent article by Richardson and Hyland[16].

SUMMARY

A résumé is made of the various types of aneurysms of the internal carotid artery and its branches. Proven examples of various types are recorded.

A case of rare bilateral internal carotid artery aneurysm is recorded.

Essentials of diagnosis are outlined.

Treatment consists of isolation of the diseased vessels from the circulation. The means of accomplishing this varies with the location of the lesion. The surgical principles are discussed.

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SUMARIO

Un resumen es hecho de los varios típos de aneurismas de la arteria carótida interna y sus remas. Ejemplos probados de varios típos son mostrados.

Un caso raro de aneurisma bilateral de la arteria carótida interna es mostrado.

Elementos esenciales de diagnóstico son subrallados.

El tratamiento consiste de aislamiento del vaso enfermo de la circulación. Los medios de realizarlo varia con la localización de la lesión. Los principios quirúrgicos son discutidos.

RÉSUMÉ

L'auteur nous présente un résumé des differents types d'anévrismes intéressant l'artère carotide interne et ses tributaires. Des cas sont cités.

Un cas rare d'anévrisme bilateral de l'artère carotide interne est rapporté.

Les signes essentiels du diagnostic sont discutés.

Pour le traitement, il faut isoler la circulation dans les vaisseaux atteints.

Les mesures á prendre sont dictées par le siège de la lésion. Les principes chirurgicaux à employer sont discutés.

United States Chapter, International College of Surgeons Meeting, Denver, Colorado, July 15-July 18. Have you made your reservations?

Lesions of the External Peroneal Nerve

RELIEF BY TRANSPLANTATION

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HEMPSTEAD, N Y

MOST surgeons are familiar with the ulnar palsy occurring in the hand following some acute injuries at the elbow, and following years after malunited fractures about the elbow These lesions are relieved by transplantation of the ulnar nerve from its groove behind the elbow into the soft muscle space in front of the medial epicondyle

Similar lesions occur in the lower extremity over the external peroneal nerve distribution This nerve is very easily injured because of its superficial course around the head of the fibula Treatment is difficult if the secondary changes cause continual pressure over the nerve

Transplantation of this nerve has been done in four cases with relief of all symptoms Because of the anatomical situation of the nerve, the head, neck and upper one inch of the fibula were excised The nerve was then transplanted into this defect without tension.

Resection of the upper portion of the fibula permits the peroneal nerve to take a shorter route, thus allowing for the increase in nerve length demanded in the surgical correction of genu valgum

E A Female, White, Age 61

On 5 24-40 stated that for one and one half years she had had pain in the left calf of severe type, cramping in nature, aggravated by walking and straightening the leg

Examination showed a peripheral vascular disease bilaterally, decreased sensation over the peroneal distribution in the left foot, inability to straighten the left knee due to pain. Pressure over the peroneal nerve caused exquisite pain and referred pain to the foot The calf was atrophied

On 6 2 40 exploration of the peroneal nerve was done A chondroma arising from the upper tibio fibular joint was found projecting posterio laterally against the peroneal nerve To remove the tumor completely the head of the fibula was resected The peroneal nerve was transplanted into this defect Complete relief of pain was obtained On 2 20 42 patient had normal extension flexion to 120 degrees There was some sub patellar crepitus in the knee There was *no complaint*

H K Female White Age 38

Patient was in an auto accident in December 1939 receiving a fracture of the tibial condyles There was an old deformity of the leg with hyperesthesia of peroneal distribution in the foot Pain was constant on walking before the accident

An open reduction was done with fixation of the tibial condyles by a screw The peroneal nerve was dissected out and the upper end of the fibula removed. The nerve was transplanted Peroneal symptoms disappeared In December 1941 the patient had no complaints Knee motion showed the greatest angle of flexion to be 185 degrees, and the greatest angle of extension to be 180 degrees

J F Male White, Age 42

Patient was first seen on 7 7 40 at which time he states that in 1917 he had been shot in the region of the right fibular head In 1939 he had an abscess in the region of the right upper leg After this he developed severe pain radiating from the knee to the foot, of the pin and needle type This was made worse by walking Examination showed a fixed equinus of the right foot, flexion deformity of the right knee and hip, weakness of all the dorsiflexors of the right foot Pressure over the scar near the head of the fibula caused severe pain radiating to the foot There was hyperesthesia of the outer side of the foot

On 7 10 40 an operation revealed very extensive varicosities of the peroneal nerve for four inches above the head of the fibula and two inches below About the head the nerve was so constricted that the size was smaller than normal The nerve above the constriction was about the size of an adult thumb The head and neck of the fibula were removed and the nerve was transplanted The pain was relieved in forty eight hours

In December of 1941 patient was still free of pain He still had the flexion deformity of the hip

M M Male, White, Age 56

On 11 14 41 patient complained of pain in the left foot and along the outer side of the leg radiating to the knee This was aggravated by walking He stated that the fourth and fifth toes were dead and that the outer side of the leg burned continually

Examination showed a peripheral vascular disease bilaterally, numbness over the entire peroneal distribution, weak dorsiflexors and peroneal muscles Pressure in the region of the head of the fibula caused severe pain, similar to the pain of which patient complained.

On 11-19-41 exploration revealed a chondroma of the fabellum present. The nerve showed marked varicosities. The tumor was removed and the head and neck of the fibula resected. The nerve was transplanted. On 12-20-41 there was no return of sensation, but none of the former pain was present.

SUMMARY

The author reports four cases in which transplantation of the peroneal nerve caused immediate cessation of pain.

SUMARIO

El autor reporta quatro casos en los cuales transplantacion del nervio peroneal causa el inmediante cesacion de dolor.

RÉSUMÉ

L'auteur rapporte quatre cas dans lesquels la transplantation du nerf peronéal amena une cessation immédiate de la douleur.

All Fellows, Members, and Associate Members of the International College of Surgeons, as well as the new candidates to be inducted at the Denver meeting, are requested to bring their caps and gowns to the Assembly. These will be worn in the academic procession of the Convention by all except men in uniform, who will not wear caps and gowns.

Observations on Herniated Discs and Hypertrophied Ligamentum Flavum

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THE SURGICAL entities of herniated disc and hypertrophy of the ligamentum flavum have probably received a greater build-up than any other of modern times. The literature of the last five years has been replete with articles regarding these conditions and their treatment.

Historically, it is interesting to know that neurosurgeons have been removing cartilaginous bodies from the spinal canal for many years without recognizing the true nature of these lesions. As far as we can determine Dandy[1] was the first to recognize them, and reported to this effect in 1929. Apparently not too much attention was paid to Dandy's report, and it was not until Mixter and Barr[2] wrote on the subject in 1934 that the profession really directed its attention toward these conditions. Since the time of their report it has rapidly become "open season" on discs all over the country, and whenever such enthusiasm occurs there are bound to be many errors and many untoward results.

Literally thousands of backs have been operated upon for discs in the last seven years, and undoubtedly many of them unnecessarily so, and many of them with poor results.

It is not the purpose of this paper to add another testimonial to the many already occurring in the literature, but rather to point out part of that side of the picture which is too often left untold in medical literature; in other words, the bad side of the picture.

Since so much has been written about how to diagnose these lesions, the problem now ceases to be how to diagnose them, but rather how to keep from diagnosing them. For the sake of completeness, however, some of the cardinal findings should be again emphasized.

A history of recurrent attacks of low-back pain, usually with sciatic radiation, which may or may not respond to conservative measures should lead to the suspicion of such a lesion. If there is a history of a definite back injury anteceding the onset of symptoms, one should be even more suspicious, since approximately 85 per cent of the cases have a definite history of back injury. These patients commonly complain of paresthesias in the extremity, intermittent weakness, relief or aggravation of pain on change of position, and referred pain on coughing and sneezing. They may have any or all of the following cardinal findings present: lumbar muscle spasm, limitation of motion, tenderness over spinous processes, atrophy, diminution or absence of reflexes in the lower extremity, and sensory disturbance which is most apt to be in the calf or the outer side of the foot.

If herniated disc is such a common lesion and one that should warrant surgery being performed on the thousands of cases that have been reported, then it might well occur to the independent thinker to wonder what has happened to all of the hundreds of thousands of people having these discs that have not been operated on in the past generation. In other words, why is the world not full of disc cripples? There can be only one answer to this, and that is that the majority of the people having these lesions must either have obtained relief spontaneously or by therapeutic measures of a conservative nature. It is my personal opinion that at least 85 per cent of all cases of herniated discs can be relieved by non-surgical measures.

The practice of advising operation immediately on the diagnosis of herniated disc without the employment of all of the various conservative measures is therefore certainly reprehensible. I have seen a number of patients who had all of the cardinal points in their history and all of the points in the examination necessary to make the diagnosis of herniated disc. There is no question in my mind that had I operated on these same cases I would have found a nice, large "juicy" disc and would in all probability have cured the patient. However, I feel that so many of them could be cured without operation that this should never be done until chronicity is established and conservative measures have failed.

Among the conservative measures which should be used, or which should be attempted, are manipulation, casts, extension, braces and other orthopedic procedures including physiotherapy, diathermy, etc.

I have found a very innocuous procedure to be curative in a number of cases, namely, the old and now neglected epidural injection of novocaine and saline. In years past a very commonly used method for the treatment of so-called sciatica was the use of epidural injection, and in most hands relief was obtained in from 50 to 60 per cent of these cases. There is no question whatsoever in my mind but that many of these cases cured by epidural injection actually had herniated discs. I have had several cases that I am absolutely certain had herniated discs, in whom by virtue of the fact that chronicity had not been established, epidural injection was tried and immediate relief obtained. This is perhaps true only in those cases that have not gone many months or years. It should most certainly be tried in early cases, and there is nothing to be lost in trying it in chronic cases.

Let us assume that in spite of all various conservative measures mentioned the patient still continues to have recurring attacks of disability and has developed the cardinal findings of herniated disc. Then, and only then, should surgery be considered.

DIAGNOSIS

When the time has arrived for considering surgery, then the question of positive diagnosis arises. There is only one absolutely certain way of diagnosing and localizing these lesions, and that is by means of intraspinal lipiodol. I shall not go into the various pros and cons of the use of this contrast media except to state that in non-compensation cases there is no valid contra-indication to its use. In compensation cases, however, it should be used only as a last resort because of the various medico-legal aspects which may follow its introduction into the spinal canal.

Air myelography has the advantage of simplicity, and the fact that it leaves no x-ray or other evidence of its use. It has, however, the distinct disadvantage of being a most inaccurate procedure, and it is pretty well agreed that a negative air myelography does not by any means rule out a herniated disc. A positive air is diagnostic, but even here multiple lesions may be missed unless checked by lipiodol.

Is it possible to definitely diagnose and localize a disc clinically? Spurling[3] says it is in the vast majority of cases. Dandy[4] reasons as follows: Since 85 to 90 per cent of all of these lesions are either in the fourth or fifth lumbar interspaces, it is not necessary to use a contrast media. Exploration of the fourth and fifth interspaces will disclose 9 out of 10 of the lesions. The only trouble with this reasoning is that one wonders about the other 10 to 15 per cent, where the lesion may be in one of several interspaces. A successful "batting average" of 90 per cent is not too bad, and perhaps this reasoning is valid. In the remaining 10 per cent where the lesion is not discovered, it would become necessary to use lipiodol and a second operation would have to follow after correct localization of the lesion.

My own feeling regarding this question is that in medico-legal or compensation cases, operation could well be performed on the clinical diagnosis without the use of lipiodol, and those cases in which the lesion was not discovered could be checked with lipiodol if they failed to get relief. In this way we would avoid the use of this contrast media in 90 per cent of the cases. In private cases, however, I cannot see that lipiodol offers so many contra-indications as to warrant the exploration of 2 or 3 interspaces or even multiple operations when the operation could be limited to one definite interspace following the use of lipiodol.

Perhaps all of us may some day reach the excellent diagnostic level where we can definitely localize the interspace as Spurling does, and we then can dispense with contrast media entirely.

Herniated and Protruded Discs. There has been very little written regarding the differentiation between herniated and protruded discs. One would judge, therefore, that most authors use the terms interchangeably. In my experience they should be very definitely differentiated since the results in the two conditions are entirely different. I am unable to state how this differentiation can be made clinically. I do feel that it can be made roentgenologically in many cases using lipiodol as a contrast media. My roentgenologic confreres, however, do not agree with this concept. If the defect in the lipiodol column is a sharply punched-out one, I feel very confident that I will find a herniated disc, and always do. When, however, the defect is one in the nature of a rounded V or an hour-glass type of deformity, then I am inclined to believe that I am going to find a protruded rather than a herniated disc. There are several gradations between these two pictures which I am unable to classify, but I feel that at both extremes one should be able to recognize them roentgenologically. The defect produced by *ligamentum flavum* will be discussed later.

Pathologically I differentiate between herniated and protruded disc as follows: The herniated disc is a true herniation of the nucleus pulposus and the annulus fibrosis into the spinal canal. Many times it is lying free and needs only to be "plucked out." In other cases, when the posterior longitudinal ligament is severed, it extrudes itself almost like tooth paste coming out of a tube. In a few cases it is necessary to curette, but always a definite structure, either in one large, or several smaller pieces, is easily removed. The protruded disc offers an entirely different picture. After cutting the posterior longitudinal ligaments there is no extrusion of the disc, and it is necessary to curette it out and remove it piece-meal. In other words, it is a more or less solid structure having none of the characteristics of the previously described herniated disc.

Where multiple discs are reported, it is my experience that they are practically always protrusions rather than herniations. In my limited experience I have never seen more than one true herniation of a [illegible] in a [illegible] I have seen a where one has been a true herniation and the others a protrusion.

Not only should these lesions be differentiated clinically and pathologically, but it is my opinion that they have an entirely different etiology. It would seem that a herniated disc is a true herniation as described and is due to injury to the back or to extraordinary strain, or to weakness of the retaining membranes. The protruded disc on the other hand is simply an exaggeration of a normal structure, and might be better called a hypertrophied disc rather than a protruded one. This apparently follows long-continued strain on the ligamentous and disc structures rather than a single or repeated back injury, and it is really a hypertrophied and protective mechanism on the part of nature rather than a herniation. In other words, it must be entirely analagous to the hypertrophied ligamentum flavum which I shall discuss at this time.

Hypertrophied ligamentum flavum. Hypertrophied ligamentum flavum per se is a diagnosis which in my opinion signifies that the underlying pathology has either been misdiagnosed or has not been found. It is sometimes difficult to differentiate between the various lesions, even with lipiodol. I have seen cases in which the hypertrophy of the ligament was so marked, and had extended so far laterally and anteriorly, that I am confident that it would be impossible to differentiate it roentgenologically either from a herniated or protruded disc. When the major deformity is in the anterior aspect it is most apt to be a herniation or protrusion. In the first 50 cases that I operated I found only hypertrophied ligaments and no discs in 9. This is entirely too high a percentage. Of these 9 cases only 2 were such that I felt the ligament was the primary cause of the trouble, and neither of these has had a particularly good result. Out of the last 20 cases in only 2 have I been forced to make this diagnosis.

It is my opinion that hypertrophied ligamentum flavum as a cause of low-back pain and sciatica has been very much overrated. I feel that the hypertrophy indicates underlying pathology; either a disc or the existence of a structural weakness of the back, and the hypertrophy of the ligament is one of Nature's efforts to immobilize the necessary joints. It is, therefore, a protective mechanism rather than a primary pathology. It is true that in some cases the hypertrophy becomes so marked as to compress nerve roots and thus cause symptoms, but there is other pathology present which caused the hypertrophy in the first place.

Protein Determination. The question of the value of total protein determination in the spinal fluid can be answered by stating that if the total protein is elevated to 40 mgms. or more it is confirmatory evidence of the presence of a disc. If it is not elevated it is of no significance, as I have seen any number of huge protrusions without any elevation of total protein. Perhaps this test is subject to laboratory error.

The question frequently arises as to whether this is a neurosurgical or an orthopedic procedure. Since the majority of these cases are now taken care of surgically with the removal of a minimal amount of bone, and in many cases no bone at all, it would seem that any claim of the orthopedic surgeon by virtue of the fact that the operation entails laminectomy is untenable. The important part of the operation is the handling of the nerve overlying the disc which would seem to be a neurosurgical procedure. My chief objection to the orthopedic side of this picture is that the orthopedists seem to feel that fusion is necessary in all cases, which of course it is not.

There are cases in which fusion should

follow removal of the disc. These are the cases where there is a structural weakness of the back, and particularly cases of horizontal sacrum. I feel that where multiple discs are present fusion is indicated, but in single lesions without structural weakness I can see no indication for fusing after the removal of a disc.

SURGICAL TECHNIC

There are four main types of procedure used in dealing with these lesions. The original operation was an extensive laminectomy. This is rarely, if ever, done at the present time. The second type of operation used is hemilaminectomy. This also is not very often necessary. The most common type of operation used at this time, at least by me, is a partial laminectomy to obtain just sufficient exposure to remove the disc without too much difficulty. In the majority of cases it is necessary to remove only a very small portion of the lamina above and below the interspace in order to remove the disc. The spinous processes ordinarily need not be disturbed. Occasionally it is necessary to remove a portion of the spinous process above and below in order to obtain exposure. This type of operation is modified to suit the demands of the individual case and there is no structural weakness of the back as a result.

The operative procedure of choice is removal of the disc without attacking the bone at all. This can be accomplished where the herniation is small and the interspace is large, in which case it is only necessary to remove the ligamentum flavum, retract the nerve and remove the disc. This is the ideal operation and should be attempted in every instance, but ordinarily the previously described type of operation becomes necessary.

It has been my practice to remove the lipiodol in all cases, but Spurling's suggestion of not disturbing the lipiodol because he feels its removal is more dangerous than leaving it sounds very reasonable in the light of some of the experiences I have had, which will be related.

RESULTS OF SURGERY

In reading the reports in the literature one is very apt to come to the conclusion that the picture as far as final results are concerned is a very rosy one. This has not been entirely my experience. In attempting to evaluate the final results of surgery, I have found that it becomes necessary to divide the patients into two groups: first, the private cases, and then the compensation cases, since the results in the two groups are vastly different.

Of the first 50 cases done up to January 1940, 46 are reported at this time. Of these 24 were private cases in whom there was no element of compensation. Twenty-two or 91.7% were sufficiently relieved so that they could be classified as cured. The other 2, or 8.3% were improved, and there were no failures. Interestingly, the two cases that were not classed as cured were both instances where only hypertrophied ligaments were found, an all of the 22 cured cases had definite herniated or protruded discs.

When we consider the 22 compensation cases we have an entirely different picture. In the first place it is extremely difficult to place any kind of value on the results because of the patients' common urge for increased compensation and their unwillingness to admit improvement or cure. I was able with a little straining on our part to classify 7 or 31.8% of these cases as cured. Seven or 31.8% were classified as 50 per cent or more improved, and 8 or 36.4 per cent as failures.

It is obvious in deal[illegible] of case that anything [illegible]

de la porción de lámina arriba y abajo del interespacio. La practica de fusión en éstos casos, tan comunmente seguida por cirujános ortopédicos, no es aconsejada. Fusión es necesaria en no mas del 10% de los casos; esos en los cuales anomalia de los huesos es presente tales como sacro horizontal.

4. En 24 casos privados, 22 (91.7 por ciento) fueron suficientemente aliviados para ser considerados como curados; los otros 2 (8.3 por ciento) fueron mejorados. No hubieron fracasos. En 22 casos de compensación (seguro), 7 (31.8 por ciento) fueron clasificados como curados; 7 (31.8 por ciento) como cincuenta por ciento o mas mejorados, y 8 (36.8 por ciento) como fracasos. Es por lo tanto importante evaluar la psicología del paciente, si su deseo principal es el obtener compensación, siendo por lo tanto una perdida de tiempo para el cirujáno tratar de llegar a una conclución propia de diagnóstico.

5. Cuatro casos en los cuales los resultados siguiendo la operación no fueron satisfactorios como discutidos.

RÉSUMÉ

1. Dans la majorité des cas bien choisis bein diagnostiqués, et bien opérés de disques intervertébraux herniés, les résultats sont bons.

2. L'auteur avance l'opinion que quatre-vingt-cinq de tous les cas peuvent être soulagés par des mesures non-opératoires, et il ajoute que les moyens conservateurs (manipulation, plâtres et autres procédures orthopédiques) doivent être employés avent d'avoir recours à la chirurgie.

3. L'opération de choix est l'enlèvement du disque hernié sans infliger de lésions à l'os. Ceci sera fait dans tous les cas; s'il est nécessaire on enlèvera une portion de la lame audessus et audessous de l'intervalle. La fusion, ordinairement recommandée par les chirurgiens orthopédiques, ne sera pratiquée que rarement. La fusion n'est indiquée que dans moins de dix pour-cents des cas: in presences d'anomalies osseuses tel qu'un sacrum horizontal, etc.

4. Dans vingt-quatre cas personnels, 22 (91.7 pour cent) furent soulagés de tetle facon que nous les considerous guéris, les deux autres montrèrent une amélioration. Iln'y eut aucun insuccès. Dans 22 cas d'accidents du travail, 7 (31.8%) furent guéris; 7 (31.8%) montrèrent une amélioration de 50 pour cent ou plus et dans huit cas (36.4%) les malades n'accusèrent aucune amélioration. Il importe d'évaluer la psychologie du malade: sa principale préoccupation est d'obtenir une compensation. Cela rend difficile et la tâche du chirurgien, et un diagnostic précis.

5. Quatre cas qui aprés l'opération donnèrent des resultats peu satisfaisants sont analysés en detail.

INTERNATIONAL COLLEGE OF SURGEONS

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Surgical Aspects of Prefrontal Lobotomy*

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PREFRONTAL lobotomy has been performed in 131 patients with mental disorders Thorium dioxide or lipiodol has been injected at operation and the depth and the extent of the incisions in the frontal lobe have been verified by roentgenograms in nearly all cases The best results occur when the lobotomy is made in the plane of the coronal suture When the frontal lobe is incised too far anteriorly, there is but temporary or no relief from distressing mental symptoms When the incisions are made too far posteriorly in the prefrontal region, there is profound inertia, dullness and disorientation with masking of the facies and vesical incontinence which later goes over into a state of bland and euphoric indifference Equally important as the plane of the incisions are the depth and extent of the incisions in the frontal lobes Prefrontal lobotomy may be performed in the plane of the coronal suture, but if insufficient white matter is cut, then worry, nervous tension, apprehension and obsessive thinking are not permanently relieved The operation must be done on both sides symmetrically

It is our opinion that the profound emotional alterations in the absence of any serious intellectual deficit are the result of section of fibers connecting the prefrontal region with the thalamus, that is, the thalamo frontal pathway Anatomic study of three cases revealed almost isolated degeneration of the nucleus medialis dorsalis of the thalamus

This paper will be limited to the surgical aspects of prefrontal lobotomy A complete discussion of the subject and the evidence for the statements made here are contained in our monograph entitled, "Psychosurgery — Intelligence, Emotion and Social Behavior following Prefrontal Lobotomy for Mental Disorders"

Written permission for operation is obtained from the patient and from the nearest relative in nearly all cases When patients are so disturbed that they are unable to sign, written permission for operation is obtained from the nearest relative, and in some instances from the two nearest relatives It is important to tell the relatives what they may expect following operation They are informed that the patient is usually drowsy, unresponsive and disoriented for several days Approximately half of the patients have vesical incontinence which usually clears up before they leave the hospital but which may last longer They are told the operative mortality, the incidence of hemiplegia and the incidence of convulsive attacks which are known to develop No patient is accepted for operation unless the family can arrange to look after him during the period of readjustment following discharge from the hospital

Local anesthesia is used in about half the cases Patients with agitated depression and uncooperative schizophrenics are operated upon under avertin [illegible] often necessary to anesthetize patients before shaving the head. Only frontal and temporal regions are shaved.

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In 1936 a bilateral operation upon the frontal lobes was proposed by Egas Moniz for the treatment of certain mental disorders. He considered the symptoms in the functional psychoses due to the development of stereotyped patterns in cortical association centers and thought that by forcibly breaking up the connections over a large area an opportunity would be given for reintegration of cortical activity along different lines. He first injected small amounts of alcohol into the white matter of the prefrontal region but soon substituted the leucotome which was found to be more precise.

THE MONIZ TECHNIC

The Moniz technic was employed in our first twenty cases. Six spherical cuts or cores were made in the upper part of the prefrontal area of each frontal lobe. Thorotrast was injected in some of our patients to visualize the cores. Although there was immediate remission of symptoms in the majority of cases, within a few months many relapses had occurred. It was noted that patients who were alert, well oriented and euphoric for a few days after operation usually relapsed, while those who were unresponsive, drowsy and disoriented usually secured satisfactory clinical results.

We changed the technic, and instead of making six spherical cuts in the upper part of each frontal lobe, made nine spherical cuts in the lower part of each frontal lobe. The cuts were made with the leucotome through the burr hole in the same location 3 cm. lateral to the midline, 3 cm. anterior to the interaural line. Cores in the lower part of the frontal lobe produced a higher incidence of good results than cores placed in the upper part of the frontal lobe. Disadvantages of this method soon became apparent. When the leucotome is inserted into the frontal lobe from above to a depth of 8 or 9 cm., a slight increase in angulation forward will place the lesion too near the frontal pole and will not relieve the symptoms. If the instrument is angled insufficiently forward, it may enter the anterior perforated space or the temporal lobe and tear penetrating branches from the anterior or middle cerebral arteries. This happened twice with fatal results. Motor pathways were damaged in one patient. With increased experience it was found that better results are obtained when a larger proportion of the white matter is cut. In order to overcome the objections to the Moniz method, the technic which is now being used was devised.

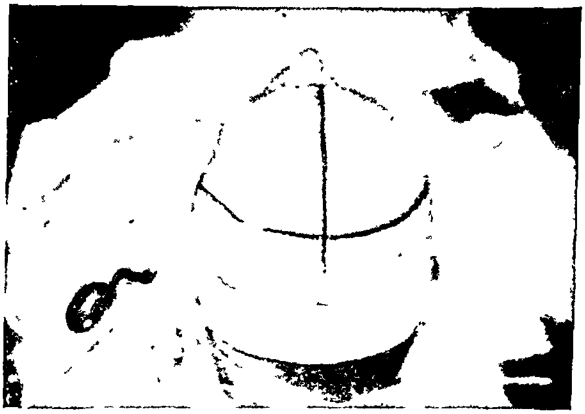

Figure 1. The coronal suture is outlined on the scalp. It crosses the midline 13 cm. from the glabella. Rubber tissue is attached to the scalp with adhesive to keep blood from leaking into the hair.

OPERATIVE PROCEDURE

Prefrontal lobotomy consists in cutting the white matter of each frontal lobe in the plane of the coronal suture. This plane passes just anterior to the tip of the frontal horn of the ventricle. The operation is carried out through a burr hole 1.5 cm. in diameter over the lateral aspect of the frontal lobe about 2.5 cm. above the floor of the frontal fossa.

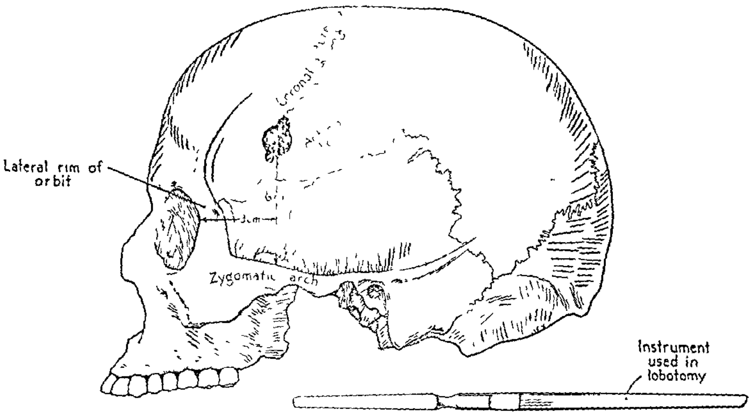

Figure 2. A burr hole is made through the lower part of the coronal suture using the measurements shown in the drawing. The hole is enlarged by taking a bite with the rongeur to allow more space to swing the blunt dissector. (After Freeman and Watts, 1942.)

From an examination of numerous skulls it has been found that the coronal suture crosses the longitudinal sinus approximately 13 cm. from the glabella. If the skull is unusual in shape or size, the site at which the coronal suture crosses the midline can be verified by making a small incision adjacent to the midline. The lower part of the coronal suture is located at a point 3 cm. posterior to the lateral rim of the orbit (anterior margin) and 6 cm. above the zygomatic process. This point approximates the lower end of the coronal suture where it meets the greater wing of the sphenoid bone. If the exposure is too low down, the burr hole may be faultily placed over the fronto-sphenoidal or temporo-sphenoidal suture. The approximate location of the coronal suture is now outlined on the scalp with gentian violet (Figure 1).

An incision 3 cm. long is made in the plane of the coronal suture, the center of the incision being 6 cm. above the zygomatic process. The incision is carried down through the skin and the temporal muscle. With hammer and chisel an impression is made in the bone at the cross-mark, thus marking the level in the vertical plane. With periosteal elevator the muscle is scraped back and the coronal suture is identified (Figure 2). The muscle and skin are retracted with a mastoid self-retaining retractor. A burr hole is made through the suture line 1.5 cm. in diameter, then the dura is incised crucially. A small bite is taken above and below with a rongeur in order to enlarge the opening. After hemostasis, an incision 2 to 3 mm. long is made through an avascular area in the cortex. A similar procedure is carried out on the opposite side. A brain cannula (we use the Watts-Freeman leucotome, which is about 15 cm. long) is inserted into the frontal lobe with the point directed at the burr hole on the opposite side (Figure 3). The instrument usually passes just anterior to the tip of the frontal horn of the ventricle and slightly posterior to the free margin [illegible]

erebri. In this plane the median longi-
ıdinal fissure is an average distance
f 5.5 to 6 cm. from the surface of the
rontal lobe. One readily recognizes the
alx cerebri, but when posterior to the
alx one is not always aware that the
edian longitudinal plane has been
rossed because the instrument may
ass through the genu of the corpus cal-
osum. If the surgeon is not sure of the
istance from the cortex to the median
ongitudinal plane, the cannula is in-
erted toward the falx cerebri where it
rosses the coronal suture. If the ven-
ricle is entered, the cannula is with-
rawn and the point directed slightly
nteriorly so that it will pass in front
f the ventricle.

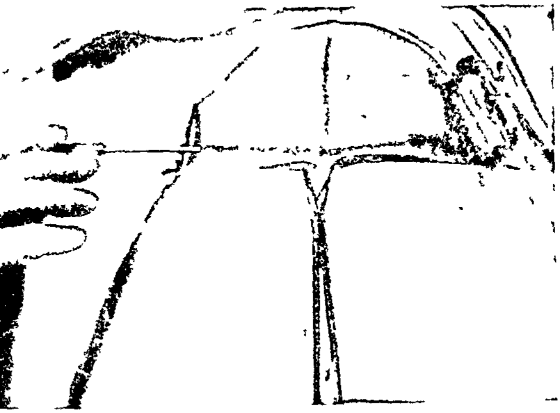

Figure 3. A brain cannula is inserted into the frontal lobe with the point directed at the burr hole on the opposite side to locate median longitudinal plane and ventricle.

The sphenoidal ridge is located by directing the cannula at an angle of 45° toward the base of the skull, always keeping it in the plane of the coronal suture (Figure 4). The sphenoidal ridge is encountered at a depth 4 to 5 cm. If the cannula, when angulated downward in this way, penetrates to a depth of more than 5 cm., the tip has probably slipped posterior to the sphenoidal ridge and has entered the middle fossa. It should be withdrawn, angled forward and reinserted. Now one knows the location of the tip of the lateral ventricle, the sphenoidal ridge, the median longitudinal fissure and 3 points on the coronal suture. All the necessary information is available to incise the frontal lobe in the plane of the coronal suture anterior to the tip of the ventricle.

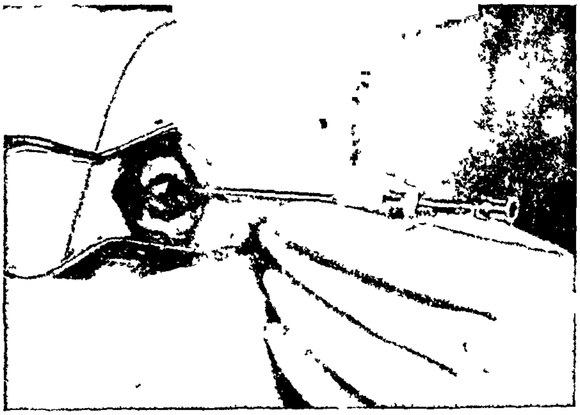

Figure 4. The sphenoidal ridge is located by directing the cannula at an angle of 45° toward the base of the skull, always keeping in the plane of the coronal suture.

A blunt dissector (we use Killian's periosteal elevator, illustrated in Figure 2), is inserted into the frontal lobe along the track made by the cannula to

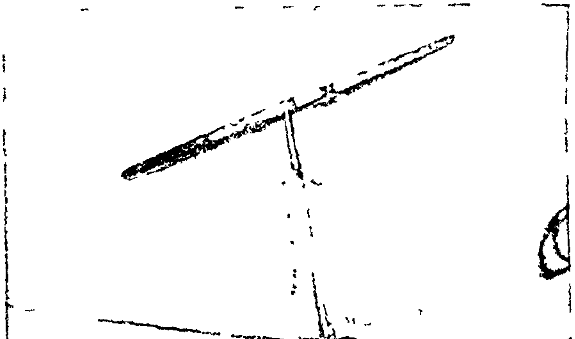

Figure 5. In order to maintain the blade of the dissector always in the plane of the coronal suture, a hemostat is clamped to the handle at a right angle. The dissector is graduated in centimeters.

a depth of 5 cm. This will avoid the gray matter on the medial surface of the frontal lobe and reduce the danger of lacerating blood vessels. It is dangerous to approach too closely to the midline since the anterior cerebral artery may be traumatized. In order to maintain the blade of the dissector always in the plane of the coronal suture, a hemostat is clamped to the handle at a right angle (Figure 5). The neurologist sits behind the patient's head with his eyes in the extended plane of the coronal suture. (If the neurologist is not available, the first assistant drops out and assumes his duties.) As the surgeon commences the subcortical incision, the neurologist guides both the dissector and hemostat in the same plane throughout the course of the incision (Figure 6). With the surface of the brain as the axis, the point of the instrument is swung downward until the floor of the frontal fossa is touched. The point of the instrument is gently drawn along the floor of the frontal fossa, cutting white matter in the lower part of the frontal lobe down to the base as far laterally as permitted by the small opening in the skull. The importance of keeping in the frontal fossa, thus avoiding the anterior perforated space and the temporal lobe, cannot be too strongly emphasized. Always cut from the center toward the periphery, as shown in Figure 8.

Often as one begins to cut the lower quadrant, resistance is encountered. Twice resistance was felt, then there was a "give," followed immediately by profuse hemorrhage through the incision in the cortex. Once the anterior cerebral artery was torn. When this happens it is necessary to enlarge the opening in the bone, incise the cortex, pack the lobotomy with cottonoid and, with the use of a lighted retractor, locate the bleeding point. The opposite ventricle is tapped to control pressure until the opening in the bone and cortex can be enlarged. No patient has been lost due to hemorrhage at the time of operation. Hemiparesis has occurred five times, but cleared up in all except the one in which the anterior cerebral artery was damaged. Now when resistance is encountered the blunt dissector is withdrawn 0.5 or 1.0 cm. until the white matter can be cut without fear of lacerating a vessel. Now this resistant white matter which we failed to section is partly cut by making several stabs into it with a slightly wider blunt dissector.

After each incision is made in the frontal lobe, it is irrigated with saline solution until the returning fluid is clear. Bleeding usually amounts to only a few drops. although it may amount to 2 or 3 cc. The incision made in the lower part of the right frontal lobe is referred to as the right lower cut or as cutting the right lower quadrant. The white matter in the lower part of the opposite frontal lobe is cut in like manner.

The white matter is now sectioned in the upper part of the frontal lobe. The blunt dissector is inserted through the same opening in the cortex to a depth of 5 cm. with the point directed at the burr hole on the opposite side. With the surface of the brain as the center of a circle, the point of the instrument is swung upward as far as the opening in the skull will permit, care always being taken to keep in the plane of the coronal suture. The white matter is thus cut in the upper and lower parts of both frontal lobes, or, stated in another way, it is cut in all four quadrants.

After the incisions in the frontal lobes have been completed and the irrigating fluid returns clear, a few drops of lipiodol are injected so that the exact location of the lobotomy can be determined (Figure 7). It is only by visualizing the depth and extent of the incisions that one can determine the cause of failure to relieve the patients' symptoms. Nineteen patients in whom prefrontal lobotomy failed to relieve symptoms, have been operated upon a second time and four have required a third before relief could

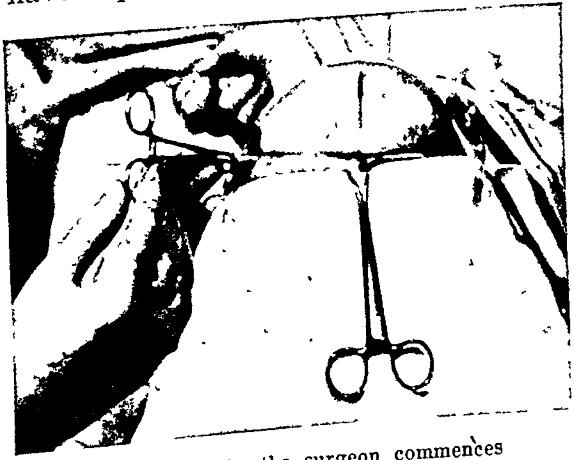

Figure 6. As the surgeon commences the subcortical incision, the neurologist guides both the dissector and hemostat in the same plane throughout the course of the incision. The photograph shows the left upper quadrant being cut. When the left lower quadrant is cut, the hemostat is placed on the opposite side, the dissector is held in the right hand and the hemostat in the left hand.

be obtained. In these nineteen patients there has been persistent relief of mental symptoms in all but two cases. Usually the second operation is performed through the same burr hole, the incisions being directed toward the medial fibers. In several instances, however, it was thought better to make new holes through the coronal suture 3.5 cm. from the midline and thus section more completely the fibers in the upper quadrants. Following this procedure there is always more profound inertia and incontinence. In the most stubborn cases the new burr holes have been placed 1.5 cm. posterior to the coronal suture. The incisions in the scalp are closed with layers of interrupted black silk sutures in the temporal muscle, in the galea, and in the skin.

The technic has been fairly well standardized, but this is not sufficient in every case. Having observed repeatedly that a satisfactory therapeutic result occurs only when lobotomy produces drowsiness and disorientation, these symptoms are now used as a yardstick to determine the extent and depth of the incision, when the patient is being operated upon under local anesthesia. Nervous tension often disappears after two or three quadrants are cut, but the patients can still repeat the Lord's Prayer, define the difference between a king and a president, multiply and divide. After the fourth quadrant is cut, he usually becomes drowsy, confused and disoriented within a few minutes (Figure 8). If these symptoms fail to occur, additional pathways are cut, usually by extending the incision closer to the midline.

Figure 7. After the incisions in the frontal lobes have been completed, 0.5 cc. of lipiodol is injected so that the exact location of the lobotomy can be determined. This lobotomy was made more extensive than usual, because the patient was a disturbed schizophrenic. The right lower cut angulates a little forward to avoid entering the middle fossa in this case.

There is very little shock associated with prefrontal lobotomy as shown by records of the blood pressure, pulse and respiration. The pulse is usually slower at the conclusion of the operation than at the beginning, most probably due to the relief of nervous tension. The blood pressure changes very little except in patients with hypertension where a great reduction sometimes is observed.

POSTOPERATIVE CARE

From the operating room the patient is taken directly to the x-ray room, if his condition justifies the manipulation which is required. A posterior anterior view and a stereoscopic lateral view of the skull are taken to verify the exact location of the lobotomy, the central beam being focused as nearly as possible over the two burr holes. The patient can usually cooperate fairly well.

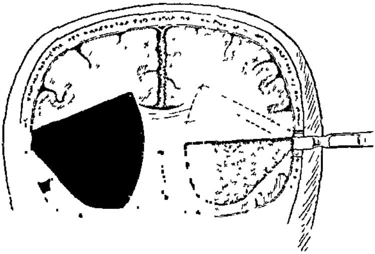

Figure 8. Nervous tension is reduced after three quadrants are cut, but the patient can still say the Lord's Prayer, define the difference between a king and a president. After the fourth quadrant is cut, he usually becomes drowsy, confused and disoriented. (After Freeman and Watts, 1942.)

The patients are put to bed in semi-Fowler position, with the head of the bed elevated at an angle of 30°. This reduces venous congestion, improves the venous return from the brain and is thought to prevent postoperative hemorrhage. The head is kept elevated continuously for 72 hours. If the blood pressure falls below 100 mm. systolic, the bed is flattened until the pressure returns to 100 mm., when it is again elevated.

The blood pressure, pulse and respiration are recorded every hour for 24 hours, then every two hours for an additional 48 hours. Rectal temperature is taken at two-hourly intervals for 24 hours and every four hours thereafter. It is desirable to have a special nurse with the patient continuously for at least 24 hours after operation. The patients are usually confused and disoriented. They frequently do not realize that they have been operated upon, and if not carefully watched, will get out of bed and wander to the toilet. While this has happened to several patients without harmful effects, it is not encouraged. Another reason for having a nurse in attendance is that it may require a day or two to determine whether the patients are still suicidal risks, and a nurse is necessary for their protection and the protection of the hospital. Elderly patients who are drowsy and unresponsive are turned in bed every two hours to prevent pulmonary congestion.

Vomiting often occurs on the operating table after the white matter is cut, particularly when local anesthesia is used. Vomiting may occur several times, then cease spontaneously. Occasionally vomiting persists for one to three days, and when it does 500 cc. of 5% glucose in normal saline is given intravenously at 6 to 12 hour intervals. Fluids by mouth are started after nausea disappears but are limited to 1,000 cc. in 24 hours for three or four days, when the normal fluid intake is resumed. A soft diet is usually started on the first or second postoperative day.

There is relatively little pain following lobotomy. Codein gr. 1 is usually sufficient to control pain. It is rarely necessary oftener than at four-hourly intervals, and many patients do not require it more than once or twice. An enema is given on the second postoperative day, and the sutures are removed on the third or fourth postoperative day.

It has been noted repeatedly that

The first 80 patients fell into the following categories: 38 involutional depressions, 18 obsessive tension states, 12 schizophrenias, 8 psychoneuroses, 4 undifferentiated. We consider the results good in 50, fair in 16 and poor in 11. The best results have been obtained in involutional depressions and obsessive tension states. Twenty patients are regularly employed, 7 are studying or partially employed, 22 are housekeeping, 18 are at home, 6 are in institutions and 7 are dead.

SUMMARY

The operative technic of prefrontal lobotomy is described, and the preoperative and postoperative care are outlined.

One hundred thirty-one patients have been operated upon but fifty-one are too recent to evaluate. Of the first eighty patients, the results are considered good in fifty. There have been three operative deaths.

The profound emotional alterations in the absence of any serious intellectual deficit are attributed to cutting the pathways connecting the prefrontal region with the thalamus.

Subdural Hematoma

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ALTHOUGH subdural hematoma has been encountered for more than 300 years, its frequent recognition as a clinical entity has been limited to the last 10 or 15 years. The earliest recorded hematomas were of the acute variety and were recognized to be the result of cranio-cerebral trauma. After the development of pathology, numerous subdural hematomas were found in which there appeared to have been no antecedent trauma. Such instances led to speculation concerning the mechanism of hematoma formation. Heschl[1] and Cruveilhier[2] believed that an inflammatory membrane preceded the hemorrhage, while Baillarger[3] and Prescott Hewett[4] reported cases in which there was good reason for believing the membrane was the result of the effusion of blood.

Virchow's[5,6] opinions for a long time dominated ideas concerning subdural hematoma. His paper published in 1857 was the first which gave a clear description of the histology of the membrane. Although Virchow recognized the fact that subdural hematoma might occur from trauma to large blood vessels or spontaneously in hemorrhagic, vascular, or valvular disease, or might burst through the pia from the cerebral cortex, he did not believe that a hematoma of such origin would reproduce the appearance or behavior of the "spontaneous" hematoma. He believed that in certain patients, especially the insane, the dura became chronically inflamed and was covered with a thin exudation of fibrin, sometimes tinged with blood on its inner surface. Capillaries grew into the membrane from the dura and, if the conditions of formation repeated themselves, another layer of fibrin might form and become organized. The tissue might become extremely vascular, with large, thin-walled, and tortuous blood vessels. Virchow believed these vessels might rupture and cause hemorrhages of varying size and that repeated hemorrhages might occur. He termed the fibrinous exudation and its organization pachymeningitis interna chronica, while if extravasation of blood was a prominent feature the condition was designated as pachymeningitis interna hemorrhagica. He called the bloody sacs or cysts hematomas of the dura and recognized that the contents of the sacs might be replaced by serous fluid. He believed small extravasations might regress but the large ones were almost invariably fatal.

Kremiansky[7] in 1868, analyzing clinical histories, found that subdural hematoma occurred in patients with many kinds of infectious diseases, especially rheumatism and typhoid fever. In all cases there was a history of chronic alcoholism, and he considered this the fundamental etiological agent. In three of four dogs to whom he administered brandy daily for two or three months he found pachymeningitis at autopsy.

Huguenin[8] recognized the possibility of trauma as an etiological factor and referred to several cases, some of which were original, in which the condition seemed due to trauma. He encountered a significant proportion of cases in patients with hemorrhagic diseases and heart disease.

Wigglesworth[9] laid emphasis on the frequency in which fresh fluid blood was found without a membrane beneath the dura in the insane; this occurred in one-sixth of his cases. He argued that the membrane could not be the only source of the hemorrhage, and that the reverse was probably true. He explained the hemorrhage by rupture of a pial vein into the subdural space.

In 1914, Wilfred Trotter[10] published an excellent article on subdural hematoma. He emphasized the traumatic origin of the condition, described the clinical picture most commonly encountered, and stressed the fact that the leon was frequently bilateral. Two of his ur cases, in each of which bilateral bdural hematoma existed, died. In either case was operation upon the second side attempted until some time after the original procedure. Trotter removed the membranes and their contents through small bone flaps although he appears to have recognized that the fundamental objective was the evacuation of the sac. His article, perhaps on account of its appearance at the start of the first World War, did not at the time receive the recognition which it deserved.

In 1925 Putnam and Cushing[11] published an article of great importance in drawing attention to this condition. Reports of the six cases, which at the time comprised Cushing's experience with subdural hematoma, and six additional cases contributed by three members of the Society of Neurological Surgeons were given. The traumatic etiology and the pathological and clinical aspects of the condition were fully considered, as well as the operative treatment.

In 1932, Gardner[12] published experimental data suggesting that the latent interval from the time of trauma until symptoms began was best explained by presuming that the membrane of the hematoma acted as a semi-permeable membrane through which fluid from the subarachnoid space passed to dilute the protein rich fluid inside the sac. This would produce a consequent increase in the volume of the hematoma sac which finally would reach a size where it could no longer be accommodated inside the intracranial cavity without symptoms. Prior to this time it had been generally believed that repeated hemorrhages into the sac occurred and this was assumed to be the explanation for the late onset of symptoms. Gardner was unable to produce true subdural hematomas experimentally in animals. He implanted cellophane sacs containing whole blood in the subdural space and observed an increase in their volume with the passage of time. He also showed by use of a hematoma membrane that dialysis through the membrane could occur in vitro.

In 1932, Fleming and Jones[13] reported nine cases in which hematomas had merely been evacuated through trephine openings and no effort had been made to remove the membrane. Although this treatment had been employed previously, it was reserved for patients who appeared moribund. Prior to that time removal of the membranes and their contents was considered desirable and necessary. There was but one death in the series reported by Fleming and Jones; this was a considerable improvement on the results generally obtained at that time. They recommended that fluid hematomas be treated by evacuation of the contents of the sac, and that osteoplastic craniotomy and removal of the membranes be reserved for the rarely encountered solid hematomas. Subsequently this method of management has been generally adopted and there has been a marked reduction in the postoperative mortality

Subdural hematoma occurs at all ages, but is most common in healthy adult males as trauma is more common in this group In most instances the condition is not severe enough to be associated with prolonged unconsciousness or fracture of the skull In many instances the injury is so trivial that no significance is attached to it by the patient and it may have been forgotten In some patients apparently no cranio cerebral injury has been sustained, and in these the hematoma appears to be truly spontaneous In these instances some hemorrhagic diathesis, such as subclinical scurvy or purpura hemorrhagica, is usually present Bleeding into the subdural space is believed to be usually the result of injury to a vein passing from the cerebral cortex through the subdural space to enter the superior saggital sinus although at times the damage is to other veins Trotter[10] suggested that blows to the head in an anterior or posterior direction were more likely to cause such bleeding He believed that the falx was in such instances unable to prevent movement of the brain as well as it might with laterally placed blows A subdural hematoma is usually of wide extent as no anatomical barriers exist in the subdural space to prevent the spread of blood. Hematomas are bilateral in 20 30% of the cases The hematoma is usually 1 to 3 cm thick, being somewhat lens shaped and tapering to its edges The medial edge of the hematoma is usually close to the superior saggital sinus, and the antero posterior diameter is usually greater than the vertical diameter While the hematoma may cover much of the convexity of the hemisphere, it rarely extends below the Sylvian fissure Munro and Merritt,[14] who studied a large series of hematomas, found that blood present in the subdural space for 24 hours was surrounded by a thin layer of fibrin Fibroblasts arose from the junction of the dura and clot, and with the passage of time the membrane in contact with the dura became progressively thicker and large thin walled vascular channels appeared; the portion of the membrane in contact with the pia arachnoid at all times remained thin and transparent The hematoma can at all times be readily separated from the inner surface of the dura, and there is never any adherence of the hematoma to the pia arachnoid Soon after its extravasation the blood inside the hematoma begins to break down As the protein molecules break down into smaller molecules, the osmotic pressure inside the hematoma sac increases and fluid is attracted into the sac Munro and Merritt suggested that a period of three to four months was required for the blood to break down completely The longer the hematoma exists, the thicker the external layer of the membrane becomes, and the thinner and more yellow appearing the fluid contained in the sac becomes Although the role of osmosis in the increasing size of the lesion is denied by some,[15] this explanation is generally accepted The following patient's course seems to support this theory

A seaman of 39 became comatose two weeks after an injury to the head When first seen he appeared moribund, having stertorous irregular respirations almost continuous right sided convulsive movements, and a temperature of 39 5° A right sided subdural hematoma was exposed through a small subtemporal opening under novocaine anesthesia The contents of the hematoma were somewhat thick and had the color of fresh venous blood After evacuating the hematoma as thoroughly as possible, the underlying cortex showed no tendency to expand to obliterate the space formerly occupied by the hematoma Lumbar puncture was then made; the intraspinal pressure was so low that no fluid would run from the needle when the stilet was withdrawn. Normal saline solution was then introduced into the lumbar subarachnoid space until the pressure was raised to 200 mg. of fluid; this required approximately 100 cc. of solution. The cerebral hemisphere expanded to almost normal size and a considerable additional amount of bloody fluid was forced out of the sac. Thorough irrigation of the sac with saline was carried out, and the wound was closed without drainage. The patient recovered promptly after operation.

Approximately a month after operation the patient began to complain of headache. Bilateral papilloedema appeared. As bilateral exploration had not been made at the time of operation on account of the patient's poor condition, left-sided hematoma was suspected. Exploration carried out on the left side failed to reveal a hematoma. Exploration on the right side, the side of the original hematoma, showed the membrane of a hematoma which contained approximately 125 cc. of clear, lemon yellow fluid. It is our belief that this fluid, which differed greatly from that found at the first operation, was produced by the further breakdown of blood which had remained in the hematoma sac at the first operation. Following the second operation the patient recovered completely and has resumed his previous occupation.

The clinical history of patients with subdural hematoma may, as a rule, be recognized without great difficulty. Hematomas coming to operation within two weeks of injury are termed acute, while after that time they are termed chronic subdural hematomas. The condition appears to be essentially the same in each. Acute subdural hematoma is commonly associated with a fairly severe head injury, and fracture of the skull is seen much more frequently than in chronic subdural hematoma. In such instances, the individual does not as a rule recover fully from his initial injury. He remains drowsy or stuporous and shows a tendency to become increasingly so. Frequently hemiparesis appears, and there is usually dilation of the pupil on the side of the hematoma. Hemiparesis is as likely to be ipselateral as contralateral. At times it is difficult to differentiate between acute subdural hematoma and extradural hematoma. Acute subdural hematomas are frequently associated with laceration and other damage to the brain. The mortality of operative treatment is high, varying from 40%[16] to 90%.[17] This high mortality has led some surgeons[17] to suggest that operations in individuals with acute subdural hematomas are contraindicated. A considerable number of patients, however, recover completely after operation.

In chronic subdural hematoma headache may be present at the time of injury, and at times persists thereafter. More commonly there is a period of from one to three months or more, probably depending upon the size of the hematoma, in which the patient is free from all symptoms. Headache then appears; it at times is unilateral although usually it is of a generalized character. Headache is frequently more severe in the frontal and occipital regions. With the passage of time the headache tends to become increasingly frequent and severe but is rarely, if ever, constant. With the advent of more severe and frequent headaches, the patient usually becomes stuporous. He may become comatose for a day or two after which he will usually again arouse for a period, only to again become comatose. Several such episodes may occur before the patient's death in coma if the condition is not recognized and treated surgically. Along with the headache, an impairment of recent memory of some degree can usually be demonstrated Often changes in the personality of the individual are apparent The patient often fails to recognize the severity of his illness He may be suspicious and he may have exaggerated ideas of his own ability Although as a rule these changes are not prominent they may at times dominate the clinical picture Neurological signs as a rule are inconspicuous At times there may be some nuchal rigidity Often there is tenderness to percussion over the skull, especially on the side of the hematoma There may be inequality of the pupils, usually the larger pupil is on the side of the hematoma In a few patients contralateral hemiparesis appears, this usually is quite late The weakness is more marked in the upper extremity than in the lower Hemiparesis is usually accompanied by increased tendon reflexes and an extensor plantar response Papilloedema is present in approximately 50% of individuals with subdural hematoma

In infants subdural hematoma is rarely recognized before the age of 4 or 5 months, when enlargement of the head is the most prominent feature Whether the hematoma is always the result of birth injury in these early cases appears somewhat uncertain Lowered Vitamin C content of the blood is usually present in infants with subdural hematoma Although some of these infants appear to be acutely ill, this is not usually true The appearance of enlargement of the head with tenseness of the fontanelle in an otherwise normal infant is the rule on examination

In the presence of a typical clinical picture spinal fluid examination is unnecessary and may be of definite danger One of our patients became comatose two hours after the slow removal of 10 cc of spinal fluid He was rescued by the prompt evacuation of a bilateral subdural hematoma In instances when the diagnosis is in doubt, spinal fluid examination should be made There is usually a moderate increase in the spinal fluid pressure, but this is not invariably true, we have encountered cases, particularly in comatose and dehydrated patients, in whom the pressure was so low that no fluid escaped from the needle after withdrawal of the stilet In approximately 50 per cent of the cases, the spinal fluid is xanthochromic, and a moderate increase in the spinal fluid protein is almost always present

X ray of the skull has rarely been of aid in establishing the diagnosis Displacement of the pineal gland may be of aid when present and suggests a space occupying lesion Pneumoencephalography may be required at times to establish the diagnosis

The treatment of subdural hematoma, if undertaken before the patient is moribund, is extremely satisfactory Although lumbar puncture has apparently benefited some of these patients temporarily and although hematomas may perhaps be absorbed spontaneously when their volume is not too great, prompt surgical intervention is indicated when subdural hematoma is believed present Aspiration of the hematoma through the fontanelle in infants is indicated According to those of great experience[18] it is necessary in infants to remove both the inner and outer membranes of the sac in order to effect a complete and permanent cure This, of course, requires an osteoplastic craniotomy It is feared in infants that the presence of the membrane may hinder the development of the rapidly growing brain In adults bilateral burr openings are made at points suitable for ventriculography, preferably under novocaine anesthesia In almost every instance, if a hematoma is present it will be exposed by such openings and may be evacuated If no hematoma is found, a ventriculogram should be made in the usual manner. A unilateral hematoma of sufficient size to be of clinical significance will produce displacement of the ventricular system to the opposite side; bilateral hematoma, however, may fail to show such displacement. Rarely, subdural hematoma occurs over the cerebellum; a ventriculogram will show a generalized dilatation of the lateral and third ventricles in such instances. Additional exploration through bur openings is indicated when there are ventricular abnormalities shown by the pneumoencephalogram. When a subdural hematoma is present, the dura when exposed after perforation of the skull is often discolored blue or gray. The outer membrane of the hematoma is usually plum colored or slate gray. The outer membrane of the hematoma is opened and the fluid in the sac is allowed to escape; the head is lowered to increase the intracranial pressure and facilitate as complete evacuation as possible. When no additional fluid escapes spontaneously, the interior of the sac is irrigated with normal saline solution until the return flow is clear and colorless. Usually the hematoma contains 100 to 150 cc. or more fluid. If the cerebral cortex fails to expand after evacuation of the hematoma, lumbar puncture is made and normal saline solution is introduced into the subarachnoid space until a pressure of 200 mg. of fluid exists. This usually causes expansion of the cortex. Postoperatively such patients are given large amounts of fluid parenterally, are kept flat in bed, and are hyperventilated with a carbon dioxide-oxygen mixture every four hours. These measures tend to increase the intracranial pressure and further the obliteration of space formerly occupied by the hematoma. A small rubber tissue drain is always left in the hematoma sac at the time of closure of the wound. Occasionally, fairly large amounts of fluid drain from the hematoma sac during the first postoperative day or two. The drain is removed after the cessation of drainage. Fresh bleeding into the hematoma sac after operation apparently never occurs. On account of the frequency of bilateral hematoma bilateral exploration should always be carried out.

Recovery in patients with subdural hematoma is dramatic and complete. Usually within a few days after operation the patient has completely recovered. Except for the patient mentioned previously, none of our patients has required a second operation. We have had no deaths in patients with chronic subdural hematoma.

SUMMARY

Subdural hematoma is an occasional complication of cranio-cerebral trauma caused by the extravasation of blood into the subdural space where no mechanism for its prompt absorption exists. Although the condition exists in acute and chronic forms, the latter is more common. Symptoms of headache, drowsiness, and stupor may date from the time of injury, but more commonly there is a period of one to three months, or more, after injury during which the patient is apparently well. Neurological signs as a rule are inconspicuous. Bilateral hematomas are present in a considerable percentage of patients. Evacuation of the hematoma through bur openings is the treatment of choice and is attended by a low mortality. In practically all cases complete and speedy recovery occurs in patients with chronic subdural hematomas.

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SUMARIO

Hematoma subdural es una complicación ocasional de traumatismos craneocerebral causado por la extravasación de sangre dentro del espacio subdural donde no existe mecanismo para su absorción rápida. Aunque la condición existe en formas agúda y crónica, la ultima es mas comun. Síntomas de dolor de cabeza, entorpecimiento y estupor pueden estar presente desde el tiempo de la lesion, pero mas comunmente hay un periodo como de dos a tres meses o mas en el cual el enfermo está aparentemente bien. Sígnos neurológicos por regla general son inconspicuos. Hematoma bilaterales estan presente en un por ciento considerable de enfermos. Evacuación del hematoma a través de una abertura de fresa es el tratamiento a elegir y tiene una mortalidad baja. *Practicamente en* todos los casos una mejora rápida ocurre en enfermos con hematoma subdural crónico.

RÉSUMÉ

Ces hématomes surviennent assez souvent après les traumatismes craniocérébraux. Ils résultent d'un épanchement de sang dans l'espace sous-durien vu l'absence d'un mecanisme pouvant effectuer une absorption rapide du sang extravase. Les symptômes peuvent revêtir ou une forme aigué ou une forme chronique. La forme chronique est la plus fréquente. Les maux de tête, la somnolence, la stupeur peuvent survenir au moment de l'accident, mais ordinairement un, deux ou plusieurs mois s'écoulent avant, leur apparition. Durant cet intervalle le malade parait être en bonne santé. Les signes néurologiques le plus souvent, ne sont pas manifestes. Dans un pourcentage considerable des malades, les hématomes sont bilatéraux. Le traitement de choix est l'évacuation de l'hématome. Les résultates de ce traitement sont très satisfaisants. La mortalité de cette intervention est négligible. La guérison après l'evacuation du sang epanché, est rapide et complete dans presque tous les cas d'hématome sousdurien chronique.

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Traumatic Subcortical Hematoma*

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THE management of acute cranio-cerebral trauma necessitates the consideration of innumerable pathological processes. Some of these conditions, if recognized in time, prove amenable to surgical treatment. In considering the treatment of head injuries as a whole, very little detailed information related to a single entity can be given. It has therefore seemed worthwhile to give this report limiting my remarks to the problem of intra-cerebral hemorrhage.

Occasionally one encounters a patient with hemiplegia occurring almost immediately after or within a short period following a cranio-cerebral injury. The question of operative intervention is, of course, of major importance at the time, in view of the fact that a massive hemorrhage from the middle meningeal artery may be present. As the patient is observed no true phenomena of cerebral compression can be elicited and, recognizing that cerebral contusion and laceration may account for the hemiplegia, conservative measures for the treatment evidence of a massive extra-dural or sub-dural clot and conservative measures were used in combatting cerebral edema. They respondded well but the hemiplegia persisted. Subsequently in spite of more drastic measures for reducing cerebral edema they underwent changes in consciousness with stupor increasing steadily. Throughout this time the alteration of blood pressure was slight, there was a lack of bradycardia, and no sign of unilateral dilitation of the pupils to suggest a rapidly increasing mass such as clot formation with hemorrhage from the middle meningeal artery. The downward progress conformed to the symptomatology observed in cases of sub-dural hematoma or a similar lesion within the brain substance. In each case, exploration was deemed advisable and a sub-cortical hematoma was encountered in the right temporo-parietal region. The response to treatment by aspiration was quite satisfactory and the patients responded in very much the same manner that cases of sub-dural hematoma improve with evacuation or removal of

On admission to the hospital he was beginning to respond but remained semi comatose. His blood pressure was 90/60, pulse 138, and temperature 96°. Supportive treatment was instituted. Neurological examination revealed signs of a hemiplegia on the left including the lower half of the face. The pupils were equal. Following a response to treatment for shock, x ray plates of the skull were obtained which revealed a linear fracture extending upward from the right temporal region into the frontal and backward into the parietal bone.

After five hours, my associate Dr Herrmann considered the patient's condition satisfactory to permit repair of the scalp wound and this he did at that time. In all, there were about 10 separate contused lacerations, several of which exposed the bone. These were débrided as best one could. Sulfanilamide powder was instilled and layer closure without drainage was carried out in so far as it was possible to close in layers. Others were closed by through and through sutures of silk.

His subsequent course was from that time one of improvement except for signs of the hemiplegia which remained stationary. After 8 days he had a rather severe urticarial reaction to the prophylactic serum given on the day of admission. At the end of two weeks the wounds had healed completely but his hemiplegia persisted. He was somnolent but could be aroused easily.

At this time signs suggesting the presence of a hematoma were observed. He became stuporous. Intravenous hypertonic glucose and retention enemas of magnesium sulphate were given without benefit. Bilateral positive Babinski signs were elicited, his swallowing became impaired and by the 16th day following the trauma it became apparent that unless something could be done to give relief a fatal termination was near. The optic discs remained clearly outlined and the pupils equal.

Under local anaesthesia, on June 28 1941 a perforator and burr opening was made 3 cm above the ear on the right side. The extra and subdural spaces were clear of blood. The intra cranial tension was increased moderately. Its color was normal. At a depth of 4 cm in the superior part of the temporal lobe a hemorrhagic cyst was encountered from which 50 c c. of old liquefied blood was removed by aspiration.

His post operative course was satisfactory except for certain residual conditions to be mentioned. He rapidly regained consciousness and his general improvement paralleled that of a subdural hematoma. He was dismissed from the hospital July 16 1941, with steady improvement in the motor function of the face and leg but with very little motion even of gross character in the left arm.

On two occasions he has had a generalized convulsion, the last of which was early in November, 1941. His *cerebration* is excellent. He has not returned to work because of persistent impairment in use of the left side, although improvement continues by his *constant effort*.

This result is not entirely satisfactory because he failed to completely regain the function in the left arm and has had two convulsions. Possibly a wider exposure with removal of the clot through a transcortical incision as advocated by Klemme (1) would have been warranted. However one must recall that the hemiplegia occurred immediately with the injury and it is our opinion that actual destruction of a portion of the fibers in the internal capsule account for the motor signs. At any rate the blood was liquefied and easily removed by aspiration. Subsequently, the original neurological phenomena did improve but the recovery was incomplete.

Case [illegible] F J H No 43617—white male, age 53, was admitted to Oklahoma City General Hospital July 1 194[illegible]. Patient examined in consultation with Dr [illegible] Phelps Oklahoma City.

He had been thrown from his car in a collision and struck his head on the pavement. As he was placed in the car it was observed that he retained full motion in both arms and both legs but by the time he reached the hospital the left side was hemiplegic. The scalp was lacerated in the left frontal region. Marked swelling and ecchymosis of the lids of the right eye was noted. He remained semi conscious and there was very little evidence of shock.

In a period of four days the temperature increased to [illegible] the pulse varied from 80 to 90 and the blood pressure remained constant averaging 142/90. X ray plates revealed a linear fracture, without depression, extending from the right orbit upward and posteriorly through the parietal bone.

From this information it was concluded that he had sustained a severe contusion of the brain but the presence of the hemiplegia which developed too soon after injury to be accounted for by cerebral edema suggested the presence of a massive intra cranial hemorrhage. His stupor was lessening until on the 8th day after injury. He then became progressively more stuporous, the hemiplegia persisted, the blood pressure increased to 170/90 and pulse rate 124 with temperature 101 8. No evidence of papilledema or disturbance in size of pupils were noted at any time.

In spite of vigorous effort to dehydrate the brain, his stupor increased and preparations were made to explore for an intra cranial clot possibly a subdural hematoma but most probably a subcortical hematoma.

Operation. On August 7, 1941, under local anaesthesia, a perforator and burr opening was made high in the right temporal region. A very thin film of blood clot was removed from the subdural space. At a depth of 5 cm a hematoma was encountered and 35 c c of liquefied and disintegrating blood was aspirated. With a change of direction the temporal horn of the lateral ventricle was tapped and clear colorless fluid obtained. The wound was closed in layers using silk.

On his return to his room he was conscious, responsive to commands, and could move his left arm to painful stimulation. His improvement was rapid. After 10 days he persisted in showing a slight weakness of the left 6th nerve but it too was improving. He was dismissed from the hospital on the 11th post

SUMMARY

Two cases of sub-cortical hematoma of traumatic origin have been presented in detail. Both patients recovered from the immediate effects of cerebral compression. One patient persists in showing signs of partial hemiplegia and has had two convulsions. The other recovered from all signs of the hemiplegia.

The symptomatology and diagnosis in these cases has been presented to encourage consideration of this correctible condition when treating cranio-cerebral trauma cases in whom hemiplegia occurs at the time of, or soon after, the injury.

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SUMARIO

Dos casos de hematóma sub-cortical de origen traumático han sido presentados. Ambos enfermos recobraron de los efectos inmediatos de la compresión cerebral. Un enfermo persitió en mostrando señales de hemiplégia parcial y ha tenido dos convulsiones. El otro recobró de todas las señales les de hemiplégia.

La sintomatologia y diagnósticos en estos casos ha sido presentados para estimular consideraciones de esta condición corregible cuando tratando casos de trauma craneo-cerebral en los cuales hemiplegia ocurre durante el tiempo, o despues del traumatismo.

RÉSUMÉ

L'auteur rapporte en détail deux hématomes sous-corticaux d'origine traumatique. Les deux malades furent

guéris des consequences immédiates de la compression cérébrale. Un des malades souffre encore d'une hémiplégie partielle et a eu deux convulsions. L'autre ne montre aucun symptôme hémiplegique.

L'auter discute la symptomatologie et le diagnostic de ces cas afin d'encourager l'étude des traumatismes cranio-cérébraux accompagnés d'hémiplégie survenant au moment ou peu aprés l'accident causatif.

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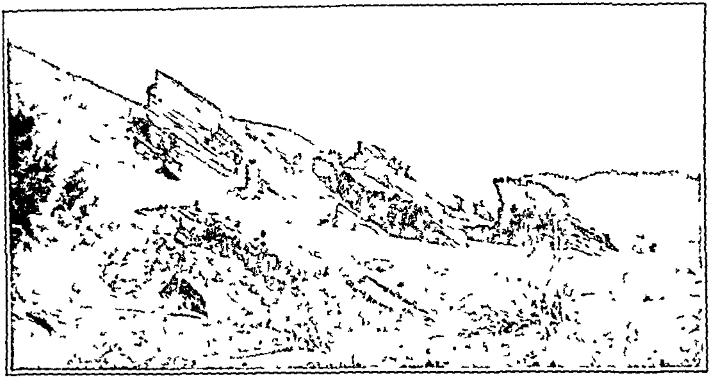

One of many beautiful cool summer resorts in the Rockies close to Denver

The President's Page

IN KEEPING abreast of modern progress and scientific demands, the International College of Surgeons has organized a Medico-Surgical Censor Board for Motion Pictures, as library and property of the College, intended to assist its membership in the diffusion of knowledge and surgical experiences throughout the world.

It has long been recognized that motion pictures illustrating case presentations, clinical and other findings, technical procedures and statistical tabulations of results have developed as a potent factor in modern teaching of medical students, in medical societies and as a means of carrying to all medical centers of the world the work in progress.

The importance of cinematography, therefore, cannot be over estimated, and at the Denver National Assembly cheduled for July 15-18, that large dical Congress will have the ad- ntage of a rich display of moving ctures.

Never in the history of our country has there been a better spirit of patriotism, self sacrifice at any cost, and readiness to lend our special services to the nation, to the Government and to the armed forces of the United States as is being demonstrated from day to day. The membership of the United States Chapter of the International College of Surgeons is displaying one hundred per cent participation in all the activities required now and for further development in which medical organization can render timely and efficient help. We like to dwell upon this subject in justice to the marvelous spirit of abnegation shown on the part of the men who are now in the various fighting fronts, as well as those who are ready to respond to the call when the time comes. Furthermore, the College as a surgical organization is on record with the proper authorities to enlist its expert war surgery activities in teaching and, by all means at its command, to add to the existing coordinated efforts of organized medicine and surgery, in order to furnish prompt and adequate cooperation in these urgent times.

Many and fruitful suggestions as to the ways in which we can be of help to the Government and to the Nation have been carefully studied and presented. Those who made the suggestions endeavored to cover all possible needs based not only upon the experiences of the first World War, but also upon the experiences of the war surgery of the Allied forces which throughout the world are rendering most brilliant results. Reports of these activities are reaching us in up-to-the-hour efforts to maintain constant touch and aid in every possible way, whether by lectures to sanitation officers in the Army and Navy, or by aiding in training of Junior officers, or by organizing groups of medical officers to be taken to civil hospitals for short periods of intensive training in all conditions likely to be met with in the war, or even by training of groups of hospital corps men for naval service.

The Denver Assembly promises to be one of the outstanding medical gatherings this summer, and we have every reason to believe that notwithstanding war conditions and traffic slowing up, that the attendance will be an unusually large one. We base our expectations not only by the able arrangements of the Committee in charge in Denver, but by the splendid acceptance of scientific contributions from a large number of outstanding authorities on various surgical and medical subjects.

A special effort is being made to introduce some of the newest scientific advancements in all specialties of general surgery, but, as stated before, the moving picture program has in store some surprises that will hold the interest of scientific men, and that will be effective in the creation of new methods of illustrating in a pictorial way physiological phenomena heretofore relegated to didactic exposition.

DESIDERIO ROMÁN, M.D.

NEWS ITEMS

Dr Manuel A Manzanilla, Vice President of the International College of Surgeons, has just been made a member of the National Academy of Medicine of Rio de Janeiro, which was founded in 1829

Dr. Harry E Bacon, Fellow of the International College of Surgeons, was elected Professor and Head of the Department of Proctology of the Medical School of Temple University, Philadelphia, Pennsylvania

Dr Fred H Albee of New York N Y, addressed a large group of medical officers at the Army Medical School (Walter Reed Hospital) at Washington, D C, on Tuesday, April 7th, 1942 The subject of Dr Albee's lecture was "A Report and Analysis of 1 147 Ununited Fractures With or Without Loss of Bone Substance" These cases were done during the First World War and in practice before and after the War

Dr. Thomas Parran, Jr, Surgeon General of the United States Public Health Service, and **Dr. Vannevar Bush**, President of the Carnegie Institute of Washington, received honorary degrees on the occasion of the one hundred and seventy sixth anniversary of Rutgers College

The LL D degree was conferred on **Doctor Max Thorek** by Lincoln Memorial University, at their convocation in June

The Jacksonian Prize for the year 1941 of the Royal College of Surgeons, London, has been awarded to **W. Bremner Highet,** of the Wingfield Morris Orthopaedic Hospital, for his essays on "Injuries to Peripheral Nerves, with Especial Reference to the Late After Results" The John Tomes Prize for the years 1939 41 has been awarded to R V Bradlaw, for his work on the microscopical structure of the dental tissue

Dr. Julius Hass, who formerly occupied the chair of orthopedic surgery at the University of Vienna, has been appointed attending orthopedic surgeon, in charge of the Orthopedic Service, at Montefiore Hospital, New York City.

The Institución Cultural Española in Buenos Aires has established a laboratory for histopathologic research in memory of **Professor S. Ramón y Cajal** to be directed by **Professor Pío del Río Hortega** of Buenos Aires with a staff of eight investigators. The institute will promote investigations on the histology of the nervous system, employing the technic of Cajal and his school.

The University of San Marcos, Peru, has awarded the degree of doctor *honoris causa* to **Dr. William Seaman Bainbridge,** of New York City, in recognition of his work on cancer and his contributions to medical progss in Latin America.

A ceremony in memory of **Polish professors** who lost their lives as a result of the German occupation of Poland recently took place at the Royal Institution, London, under the presidency of Sir David Ross, vice-chancellor of the University of Oxford. Tribute to their work was paid by Sir William Bragg, formerly president of the Royal Society; by Professor Gilbert Murray, of the University of Oxford, and by Professor Antoni Jurasz, dean of the Polish Medical School at the University of Edinburgh.

Dr. Hugh H. Young, editor of the *Journal of Urology,* having reached the age of seventy-one years, will retire on July 1 as professor of urology and as director of the Brady Urological Institute at the Johns Hopkins Hospital.

The Vichy Government has announced the establishment of the **Alexis Carrel Foundation** for Study of Human Problems, under the direction of Dr. Carrel.

A new wing of the **Barros Luco Hospital** at Santiago, Chile, has been named for **Dr. Joseph Francis McCarthy,** professor of urology at Columbia University and director of the department of urology of New York Polyclinic Medical School and Hospital.

A bronze statue of the late **Drs. William J. and Charles H. Mayo** in their surgical gowns will be the central point of interest of the Mayo Memorial Shrine to be erected in Rochester by residents of the city and Olmstead County. It will be placed on a granite base before a granite background in the central open space of an amphitheater, symbolic of operating rooms. The shrine, designed by James Earle Fraser, New York sculptor, will be separate from that being planned by the Minnesota Memorial Commission. This commission was appointed by Governor Stassen late in 1940 to study the establishment of a $250,000 fund for a memorial to the Mayos. State Senator William B. Richardson, Rochester, is chairman of the commission, which is composed of seventeen representative citizens of Minnesota.

Sixth Annual Assembly, United States Chapter International College of Surgeons

Denver, Colorado, July 15 to 18, 1942

Under the Auspices of the Colorado State Guild
of the International College of Surgeons

Headquarters: Shirley-Savoy Hotel

COMMITTEE ON ARRANGEMENTS

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Chairman of Committees

Dr. J. Rudolph Jaeger
Director of the Assembly

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J Rudolph Jaeger, M D, F I C S
Director of the Assembly

International College of Surgeons
Denver, Colorado

Gentlemen:

Color[illegible] the United States [illegible] national [illegible] 15th to [illegible]

May we hope that the distinguished members of your great organization will pause long enough from the transaction of the business of your convention to visit some of our mountains, learn of our good highways, do some trout fishing in our streams and to know why we call our state "the top of the world"

All of Colorado joins in bidding you welcome We hope that your stay may be so pleasant that you will make Colorado your summer homes.

Very truly yours,

Ralph L. Carr
Governor of Colorado
Denver, Colorado

J. Rudolph Jaeger, M.D.
Vice-President, International College of Surgeons
502 Republic Building, Denver, Colorado

Dear Doctor Jaeger:

The Colorado State Medical Society, its officers and members, welcome the national assembly of the International College of Surgeons to Denver.

We are honored to have this national gathering of prominent national and international surgeons enjoy with us the beauty of our State and the extensive educational facilities that it affords.

Sincerely yours,
G. C. Cary, M.D., President
Colorado State Medical Society
Grand Junction, Colorado

May 5, 1942
International College of Surgeons
Denver, Colorado

Gentlemen:

As Mayor, of the City of Denver, Colorado, I pleased, indeed, to know that the Officers and of your organization have decided to your Annual United States National As- bly in our City on July 15, 16, 17, and 18th. of this year.

I want to extend to you, on behalf of the citizens of Denver, and myself, a very sincere welcome and to assure you that we will put forth our best efforts to see that you have a beneficial and enjoyable meeting. We know that the Physicians and Surgeons here appreciate, very much, your meeting here.

I want to assure you again that we will be glad to have you meet with us and hope that you will feel free to call for any services which we may be able to render.

Hoping to see many of you, if not all, I am

Very sincerely yours,
Ben F. Stapleton
Mayor

Desiderio Roman, M.D. [illegible]
[illegible]

* * *

PROGRAM

International College of Surgeons National Assembly

Denver, Colorado

July 15, 16, 17, and 18, 1942

Headquarters and Meeting Place—Shirley-Savoy Hotel

TUESDAY AFTERNOON, JULY 14th—REGISTRATION
Exhibit Hall, Shirley-Savoy Hotel

WEDNESDAY, JULY 15th

8:30 A.M. Acute Abdomen.
Edwin C. Henry, M.D., F.I.C.S., Omaha, Nebraska.

8:50 A.M. [illegible]
Colorado.

9:00 A.M. A New and Function-Restoring Operation for Bilateral Abductor Cord Paralysis (With motion pictures of vocal cords before and after operation).
Brien T. King, M.D., F.A.C.S., Seattle, Washington.

9:30 A.M. Some of the Pitfalls in Thyroid Surgery.
Andre Crotti, M.D., F.I.C.S., F.A.C.S., Columbus, Ohio.

9:50 A.M. Discussion of papers by Dr King and Dr. Crotti opened by M. O. Shivers, M.D., F.I.C.S., Colorado Springs, Colorado, and H. J. Freeland, M.D., F.I.C.S., F.A.C.S., Denver, Colorado.

10:00 A.M. Intermission to view exhibits.

11:00 A.M. Cirugia De La Diabetes Mellitis
Manuel A. Manzanilla, M.D., F.I.C.S., Mexico City, D.F.

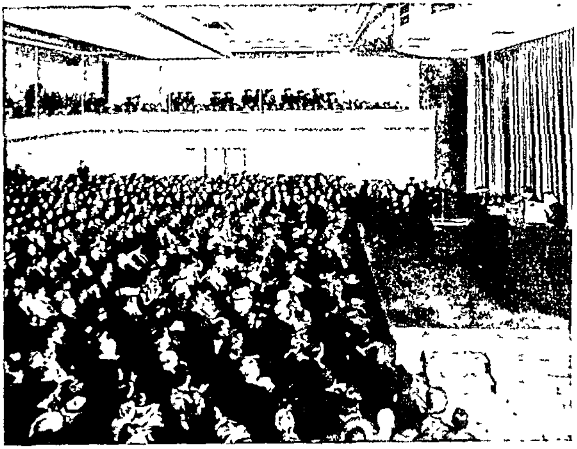
11:20 A.M. Discussion opened by C. F. Kemper, M.D., Denver, Colorado.

11:30 A.M. The Clinical End Results of Twenty-Five Years' Experience of Subtotal Gastrectomy for Gastric and Duodenal Ulcer.
Alfred A. Strauss, M.D., F.I.C.S., F.A.C.S., Chicago, Illinois.

11:50 A.M. Discussion opened by Charles Arnold, M.D., F.I.C.S., Lincoln, Nebraska, and Lanning E. Likes, M.D., F.I.C.S., F.A.C.S., Lamar, Colorado.

12:00 M. *Round-Table Luncheon*—Silver Glade Cosmopolitan Hotel.
Dr. Clark D. Brooks, Detroit, Michigan, Presiding.
Drs. Henry, King, Crotti, Manzanilla, and Strauss participating.

2:00 P.M. Treatment of Tumors of the Upper Urinary Tract.
Elmer Hess, M.D., F.A.C.S., Erie, Pennsylvania.



Assembly

2:20 P.M. Discussion opened by Edward B. Liddle, M.D., F.I.C.S., F.A.C.S., Colorado Springs, Colorado, and Henry A. Buchtel, M.D., F.I.C.S., Denver, Colorado.

2:30 P.M. CHEMOTHERAPY AS RELATED TO SURGERY.
Arnold S. Jackson, M.D., F.A.C.S., Madison, Wisconsin.

2:50 P.M. Discussion opened by Richard W. Whitehead, M.D., Denver, Colorado.

3:00 P.M. INTERMISSION to view exhibits.

4:00 P.M. OSTEOGENIC SARCOMA WITH REPORT OF 65 CASES.
Thomas A. Shallow, M.D., F.I.C.S., F.A.C.S., Philadelphia, Pennsylvania.

4:20 P.M. Discussion opened by Wm. Carpenter MacCarty, M.D., Rochester, Minnesota, and Hamilton I. Barnard, M.D., F.I.C.S., F.A.C.S., Denver, Colorado.

4:30 P.M. EVALUATING THE WORK OF THE SURGEON.
T. R. Ponton, M.D., Chicago, Illinois.

:50 P.M. Discussion opened by William R. Lovelace, M.D., F.I.C.S., Albuquerque, New Mexico, and Donat F. Monaco, M.D., F.I.C.S., F.A.C.S., Gallup, New Mex.

5:00 P.M. AN IMPROVED OPERATION FOR REPAIR OF INGUINAL HERNIA (With lantern slides).
E. Vernon Mastin, M.D., F.I.C.S., F.A.C.S., St. Louis, Missouri.

5:20 P.M. Discussion opened by W. T. H. Baker, M.D., F.I.C.S., F.A.C.S., Pueblo, Colorado, and Nolie Mumey, M.D., F.I.C.S., F.A.C.S., Denver, Colorado.

6:30 P.M. Stag Dinner—Silver Glade, Cosmopolitan Hotel.

8:00 P.M. Military Symposium — Shirley-Savoy Hotel.
Colonel Frederic S. Wright, M.D., F.A.C.S., Presiding.
Commanding Officer, Fitzsimons General Hospital, U. S. Army, Denver, Colorado.
Commander Joseph Madison Greer, M.D., F.I.C.S., F.A.C.S., MC USNR Chief of Surgery, U. S. Naval Hospital, San Diego, California.
John Amesse, M.D., State Chairman Procurement and Assignment Service Denver, Colorado.
Mr. Harvey Sethman, Executive Secretary Colorado State Medical Society, Denver, Colorado.

THURSDAY, JULY 16th

8:00 A.M. SUBJECT ON EAR, NOSE, AND THROAT (To be announced).
Thomas C. Galloway, M.D., Evanston, Illinois.

8:20 A.M. Discussion opened by Thomas E. Carmody, M.D., F.I.C.S., F.A.C.S., Denver, Colorado.

9:00 A.M. MANAGEMENT OF COMPLICATED GALLBLADDER DISEASES.
Charles D. Brooks, M.D., F.I.C.S., F.A.C.S., Detroit, Michigan.

9:20 A.M. Discussion opened by James C. MacGregor, M.D., F.I.C.S., Great Falls, Montana, and Herbert A. Black, M.D., F.I.C.S., F.A.C.S., Pueblo, Colorado.

Thomas A. Shallow, M.D., F.I.C.S., F.A.C.S.
President Elect, U. S. Chapter

9:30 A.M. SURGICAL CONSIDERATION OF OBSTRUCTING LESIONS OF THE COMMON DUCT.
Verne C. Hunt, M.D., F.A.C.S., Los Angeles, California.

9:50 A.M. Discussion opened by John M. Foster, Jr., M.D., F.A.C.S., Denver, Colorado.

10:00 A.M. INTERMISSION to view exhibits.

11:00 A.M. SURGICAL APPROACH TO MENINGIOMAS IN REGION OF THE SPHENOID RIDGE CAUSING UNILATERAL EXOPHTHALMUS.
S. N. Berens, M.D., F.I.C.S., F.A.C.S., Seattle, Washington.

11:20 A.M. Discussion opened by J. Rudolph Jaeger, M.D., F.I.C.S., Denver, Colo.

11:30 A.M. REPAIR OF WAR INJURIES TO THE BLOOD VESSELS BY SUTURE.
Charles Goodman, M.D., F.A.C.S., New York City.

11:50 A.M. Discussion opened by George W. Bancroft, M.D., F.I.C.S., F.A.C.S., Colorado Springs, Colorado.

12:00 M. *Round-Table Luncheon*—Silver Glade, Cosmopolitan Hotel.
Dr. Max Thorek, Chicago, Illinois, Presiding.
Drs. Galloway, Brooks, Hunt, Berens, and Goodman participating.

2:00 P.M. The Preservation of the Sphincter Ani in Radical Operation for Carcinoma of the Rectum.
A. A. Berg, M.D., F.I.C.S., New York City.

2:20 P.M. *Discussion opened by George B. Kent, M.D., F.I.C.S., F.A.C.S., Denver, Colo.*

2:30 P.M. A New Method of Certain Types of Cancer of the Bladder.
Lowell S. Goin, M.D., Los Angeles, California.

2:50 P.M. Discussion opened by James S. Philpott, M.D., Denver, Colorado.

3:00 P.M. Intermission to view exhibits.

4:00 P.M. The Relation of General Surgery to Eye Diseases.
William H. Ryder, M.D., F.I.C.S., New Haven, Connecticut.

4:20 P.M. Discussion opened by William M. Bane, M.D., Denver, Colorado.

4:30 P.M. Ambulatory Castless Method of Treating Compound Fractures.
Roger Anderson, M.D., F. I. C. S., F.A.C.S., *Seattle, Washington.*

4:50 P.M. Discussion opened by Hamilton I. Barnard, M.D., F.I.C.S., F.A.C.S., Denver, Colorado, and Ervin A. Hinds, M.D., F.A.C.S., Denver, Colorado.

5:00 P.M. Colored Illustrations of the Gellhorn-Dickinson Technique for Vaginal Hysterectomy Under Local Anesthesia, With an Analysis of 600 Cases.
Fred V. Emmert, M.D., F.I.C.S., F.A.C.S., St. Louis, Missouri.

5:20 P.M. Discussion opened by Dean W. Hodges, M.D., F.I.C.S., Denver, Colorado.

Evening Convocation at Phipps Auditorium, Denver City Park.
B. I. Golden, M.D., F.I.C.S., F.A.C.S., Marshal.
Address
Desiderio Román, M.D., F.I.C.S., F.A.C.S., President.
Address
Thomas A. Shallow, M.D., F.I.C.S., F.A.C.S., President-elect.

FRIDAY, JULY 17th

8:30 A.M. Un-United Fractures With or Without Loss of Bone Substance—*Report of 1,147 cases.*
Fred Albee, M.D., F.I.C.S., F A.C S , New York City.

9:00 A.M. Intragastric Photography.
Dayton H. O'Donnell. M.D., Detroit, Michigan.

9:20 A.M. Discussion opened by Frank McGlone, M.D., Denver, Colorado.

9:30 A.M. Drainage Into Alimentary Canal as Method of Choice in Operative Treatment of Pancreatic Cysts and Fistulae.
Rudolf Nissen, M.D., F.I.C.S., New York City.

9:50 A.M. Discussion opened by Duval J. Prey, M.D., F.A.C.S., Denver, Colorado.

10:00 A.M. Intermission to view exhibits.

Fred H Albee, M D , F A C S , F I C S
International President

11:00 A.M. The History and Practical Role of Diagnostic Surgical Pathology.
Wm. Carpenter MacCarty, M.D., Rochester, Minnesota.

11:20 A.M. Discussion opened by William C. Black, M.D., Denver, Colorado.

11:30 A.M. Psychotherapy in General Medicine and Surgery.
Tom B. Throckmorton, M.D., Des Moines, Iowa.

11:50 A.M. Discussion opened by Franklin G. Ebaugh, M.D., Denver, Colorado.

12:00 M. *Round-Table Luncheon*—Silver Glade, Cosmopolitan Hotel.
Dr. Dayton H. O'Donnell, Detroit, Michigan, Presiding.
Drs. Albee, Nissen, MacCarty, and Throckmorton participating.

2:00 P.M. Section of Lissauer's Tract, a Contribution to Chordotomy for the Relief of Pain.
Olan R. Hyndman, M.D., Iowa City, Iowa.

2:20 P.M. Discussion opened by L. E Daniels, M.D., Denver, Colorado.

BROWN-PALACE HOTEL Onyx Room
11 00 A M VENTRAL AND INCISIONAL HERNIAS
Deriderio Roman M D Philadelphia, Pennsylvania
E Vernon Mastin St Louis Missouri
Duval Prey, M D Denver, Colorado

COSMOPOLITAN HOTEL Room D
11 00 A M HOSPITAL AND SURGEON RELATIONSHIP
T R Ponton, M D Editor Hospital Management, Chicago, Illinois
H R McGraw M D Medical Director, Denver General Hospital, Denver, Colorado
Mr Walter G Christie Superintendent, Presbyterian Hospital, Denver, Colorado

12 00 M INTERMISSION for Luncheon

AFTERNOON BROWN PALACE HOTEL Onyx Room
2 00 P M INFECTION OF THE NECK
Brien T King, M D, Seattle, Wash
Thomas E Carmody, M D, Denver, Colorado
M O Shivers M D, Colorado Springs, Colorado

COSMOPOLITAN HOTEL Room D
2 00 P M INTESTINAL OBSTRUCTION
Clark D Brooks M D, Detroit Mich
Nolie Mumey, M D, Denver, Colorado
William H Mast, M D, Gunnison, Colorado

3 00 P M INTERMISSION

BROWN PALACE HOTEL Onyx Room
3 30 P M SURGERY OF HYPERTENSION
S N Berens M D, Seattle Wash
Manuel A Manzanilla, M D, Mexico City, D F
Douglas Deeds M D Denver, Colo
William R Lipscomb, M D, Denver, Colorado

COSMOPOLITAN HOTEL Room D
3 30 P M PROCTOLOGY
A J Chisholm, M D, Denver, Colo
Harry W LeFevre, Jr, M D, Denver, Colorado

BROWN PALACE HOTEL Onyx Room
4 30 P M CARCINOMA OF THE STOMACH
Alfred A Strauss, M D, Chicago, Ill
E J Meister, M D, Denver, Colorado
Wm Carpenter MacCarty, M D, Rochester, Minnesota

COSMOPOLITAN HOTEL Room D
4 30 P M (BAD RISK) EXOPHTHALMIC GOITER
Andre Crotti, M D, Columbus, Ohio
Arnold S Jackson, M D, Madison, Wisconsin
George B Kent, M D, Denver, Colo

THURSDAY, JULY 16th

MORNING BROWN PALACE HOTEL Onyx Room
9 00 A M CARCINOMA OF THE COLON
A A Berg, M D, New York City
William W Webster, M D, Greeley, Colorado
L. S Faust, M D, Denver, Colorado

COSMOPOLITAN HOTEL, Room D
9 00 A M EYE DISEASES
William Ryder, M D, New Haven, Connecticut
George Stine, M D, Colorado Springs, Colorado
Guy H Hopkins, M D, Pueblo, Colo
W A Ohmart, M D, Denver, Colo

10 00 A M INTERMISSION

BROWN-PALACE HOTEL, Onyx Room
11 00 A M FRACTURE OF THE LONG BONES
Roger Anderson, M D, Seattle, Wash
J E A Connell, M D, Denver, Colo
Harry C Hughes, M D, Denver, Colo

COSMOPOLITAN HOTEL, Room D
11 00 A M TREATMENT OF SHOCK
Edwin C Henry, M D, Omaha, Nebr
Fred V Emmert, M D, St Louis, Mo
E R Mugrage, M D, Denver, Colo

12 00 M INTERMISSION for Luncheon

AFTERNOON BROWN PALACE HOTEL, Onyx Room
2 00 P M INDUSTRIAL SURGERY
Carl M Peterson, M D, Chicago, Ill
George F Netherton, M D, Denver, Colorado
Robert H Fitzgerald, M D, Leadville, Colorado
Freeman D Fowler, M D, Denver, Colorado
Frank J Evans, M D, Denver, Colo

COSMOPOLITAN HOTEL Room D
2 00 P M E AP
Nebr
John M Foster, Jr, M D, Denver, Colorado
George H Gillen, M D Denver, Colo
Myron W Cooke, M D, Longmont, Colorado

3 00 P M INTERMISSION

BROWN PALACE HOTEL Onyx Room
3 30 P M VARICOSE VEINS
Charles Goodman, M D, New York City
T M Rogers, M D, Sterling, Colo
A W Metcalf, M D, Denver, Colo

COSMOPOLITAN HOTEL, Room D
3 30 P M OBSTETRICS
E L Harvey, M D, Denver, Colorado
Homer R Dietmeier, M D, Longmont, Colorado
J U Sickenberger, M D, Grand Junction, Colorado

BROWN PALACE HOTEL Onyx Room
4 30 P M GALLBLADDER DISEASE
Verne C Hunt, M D, Los Angeles, California
Max Thorek, M D Chicago, Illinois
H J Freeland, M D, Denver, Colo
G H Curfman, M D, Denver, Colo

COSMOPOLITAN HOTEL Room D
4 30 P M EAR AND MASTOID DISEASE
Thomas E Carmody, M D, Denver, Colorado
George L Pattee, M D Denver, Colo
F O Kettlekamp, M D, Colorado Springs, Colorado

DENVER HOTELS

For your comfort, pleasure and convenience, Denver offers you accommodations to meet your desires, at prices to fit your convention and vacation budget. Whether you travel modestly or seek the luxurious perfection of elegantly appointed hotels, you'll always find the same spirit of cordial western hospitality, no matter where you go.

For reservations and detailed information write:

Dr. Dean W. Hodges, Housing Committee
International College of Surgeons
502 Republic Building
Denver, Colorado.

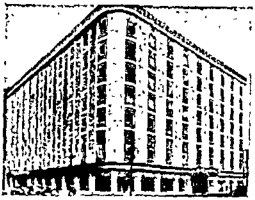
MOUNTAIN TRIPS AND RESORT ACCOMMODATIONS

- This information can be obtained from writing the above Housing Committee.

HOTEL RATES

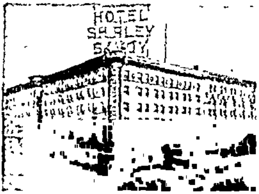
The Housing Committee recommends the following hotels—all prices quoted with bath.

The Albany Hotel	
Single Rooms	$ 3.00 to $ 5.00
Twin Bedded Rooms	6.00 to 10.00
Suites	14.00 to 20.00
The Brown-Palace Hotel	
Single Rooms	$3.85, $4.40 and $5.50
Double Rooms with double bed	5.50, 6.60, and 7.70
Double Rooms with twin beds	6.60, 7.70, and 8.80
Living Room and Bedroom suites	$10.00 to $16.00
Colburn Hotel	
Double Rooms	$6.00
Cosmopolitan Hotel	
Single Rooms	$3.30, $ 3.85, $ 4.40, $ 5.50
Double Rooms	5.50, 6.60, 7.70, 8.80
Parlors en suite	8.00, 10.00, 12.00, 15.00
Olin Hotel	
Single Rooms	$ 3.50
Double Rooms	$7.00 to 8.00
Suites	12.00
Park Lane Hotel	
Double Rooms	$8.00
Suites	$12.00 to $15.00
Shirley-Savoy	
Single Rooms	$2.50 to $ 3.50
Double Rooms	3.50 to 4.50
Parlor and bedroom	8.00 to 10.00

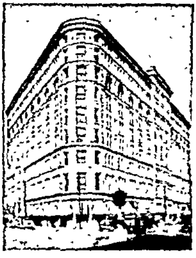


Albany Hotel

Olin Hotel



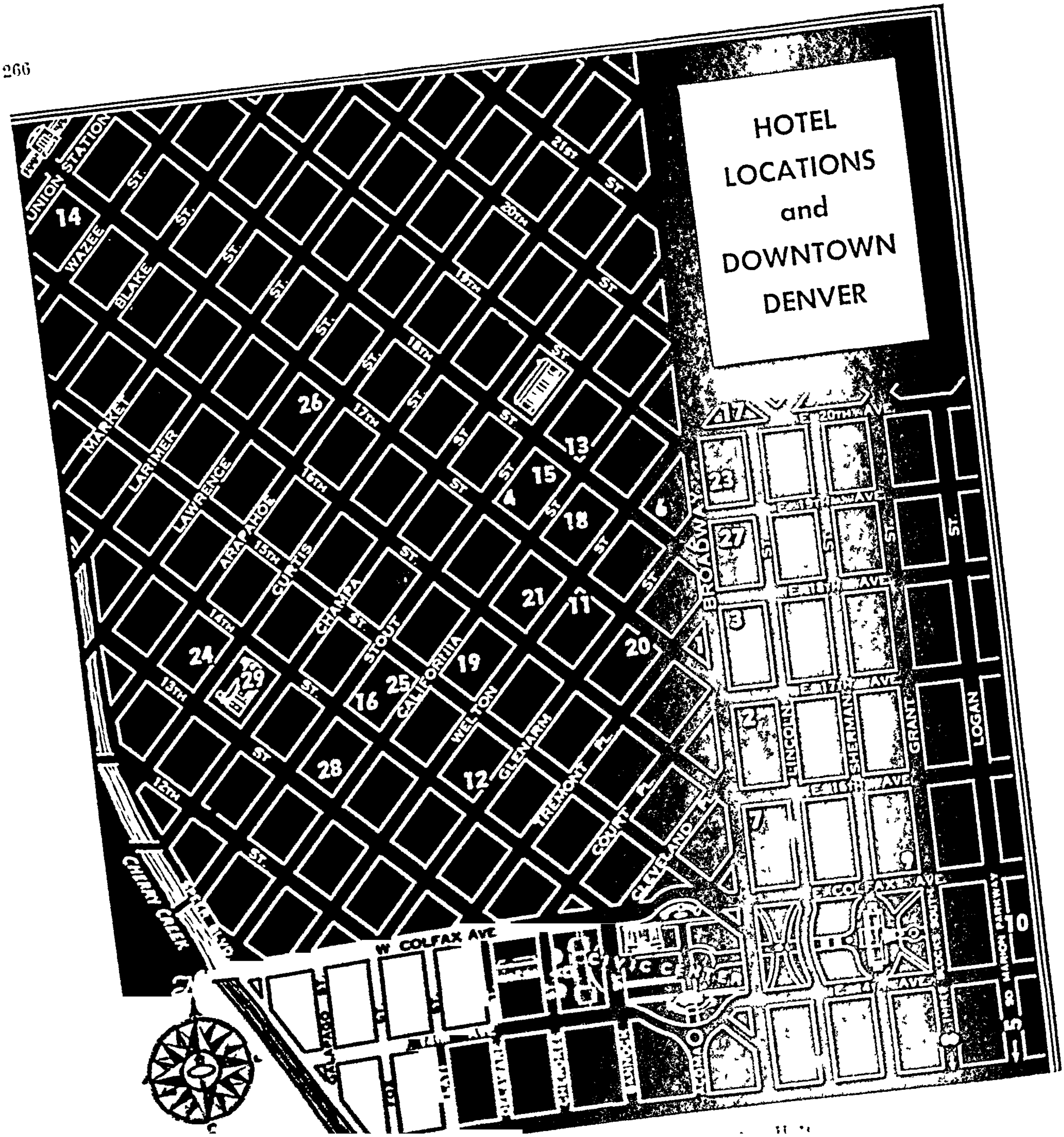
Hotel Shirley Savoy



Brown Palace Hotel

Park Lane Hotel

Hotel Cosmopolitan


HOTEL LOCATIONS and DOWNTOWN DENVER
UNION STATION
WAZEE
BLAKE ST.
MARKET ST.
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LAWRENCE ST.
ARAPAHOE ST.
CURTIS ST.
CHAMPA ST.
STOUT ST.
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CLEVELAND PL.
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GRANT ST.
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CORRESPONDENCE

PRINCIPLES OF HUMAN ANATOMY

To the Editor

"This is in the nature of a rebuttal to your reviewer's rather querulous review of our book Principles of Human Anatomy, which review appeared in the Jr Inter Col Surg, vol 7, p 287, 1940 The title of our book is justified on two counts (1) The first half of the book is a guide to dissection and, as is well known, nothing so clearly exemplifies the principles of Anatomy as dissection (2) The last half of the book is devoted to synopses which deal, often at length, with the principles we wish to stress Since the reviewer did not mention the synopses at all, we infer that he failed to read them For his perusal, perhaps even for his instruction, we recommend that he at least examine Synopsis VIII on the autonomic nervous system

Your reviewer finds that our asking of questions without answering them works a hardship on the reader So it does, if the reader cannot answer them But our clear intention is to stimulate the student to seek for himself the answers from the cadaver, the large text, the atlas This, we find, is much better teaching practice than the spoonfeeding method of answering our own questions

He further observes that on our p 37 the "hypothetical" case of inc [illegible] is discussed, which [illegible] classical case of [illegible] hernia is not chosen [illegible] he would have found that both types of hernia are equally and briefly mentioned for the sole purpose of illustrating the importance of Hesselbach's triangle

Also he objects to our p 48, where we refer the student to various text figures of the cervical fascia He correctly remarks that these figures are different But should we lead the student to think that one text is completely right on the cervical fascia and the many texts that differ from it are completely wrong? Only on subjects which come within our own field of research can we make valid claims of choice between textbooks Incidentally the textbooks differ on a host of things besides the cervical fascia

C F De Garis, M.D , Ph.D
Professor of Anatomy
School of Medicine
University of Oklahoma

The above letter was submitted to the reviewer whose reply follows

"In answer to Dr C F De Garis' letter, I wish to state

(1) I believe that the title does not indicate the scope of the book. Since over 100 pages of the book are devoted to dissections, it, therefore, seems that a happier title stressing the dissection guide feature of the work could have been chosen

(2) The reviewer is grateful to the author for agreeing in his letter that "asking questions without presenting the answers works a hardship on the reader " Having once been a student, and now teaching students, the reviewer feels that the clear, concise, explanatory method of teaching is still the method of choice in preference to the memorizing of questions and answers

(3) The reviewer read page 38 and there found mention of "incarcerated indirect inguinal hernia " He still questions the wisdom of citing the rare example of *direct* incarcerated inguinal hernia. This may give a false clinical impression because *incarcerated direct hernia is, as is well known, one of the surgical rarities*

(4) The author and reviewer again agree that many texts differ on certain anatomical points It seems to me that one writing a book and attempting to clarify the existing confusion would hardly gain his objective by referring the student back to sources which are avowedly controversial and which at best tend to confuse

One has only to write a book to appreciate the trials and tribulations that are entailed in such endeavor and the reviewer is sincerely sympathetic and appreciative of the time and effort which have gone into this volume It is a good book and I wish to reiterate that it can be in all sincerity recommended Nevertheless, constructive criticism does make better understanding "

P

The History and Evolution of Surgical Instruments, C J S Thompson Foreword by Chauncey D Leake 113 pp 115 fig $8 50 Schuman's New York City, 1942

THIS book is well written in an interesting easy to read style It is divided into twelve chapters each of which covers one type of generally used instrument The text describes briefly the manner in which some of these instruments were used and by whom thus giving an insight into the past of our profession and evolution of some of our present day instruments

The illustrations are photographs and line drawings of museum specimens which have been in the collections of the Royal College of Surgeons of London

As a whole, the book could be considered a history of the development of twelve commonly used instruments of the present day surgeon

H E Turner

The Treatment of Burns Henry N Harkins XVI 457 p 120 fig $6 50 Charles C Thomas Springfield Ill, 1942

IN PART I, The Burn and Its Effects after giving an excellent summary of the history of burns, the author discusses the etiology symptomatology, prognosis and medicolegal aspects Chapter 2 consists of a lucid discussion of the pathology of burns well illustrated by photomicrographs There are worthwhile chapters on chemical changes blood concentration following burns, and shock The physiological factors underlying the different shock theories (such as pathological physiology of the adrenals the importance of fluid loss and the influence of toxins) are discussed Bacteriological findings in burns and their importance in prognosis and therapy, early complications (such as sepsis, erysipelas, tetanus and Curling s ulcer) late complications (such as keloid contractures and carcinoma) are well described Part II, Treatment, covers exhaustively the whole field of local, as well as early and late plastic treatment A valuable section of the book is Part III in which the author gives careful consideration to the treatment of special kinds of burns, such as electrical and radiation burns, chemical burns, and burns caused by war gases and freezing Part IV summarizes, in outline form, the general and specific treatments of burns step by step The bibliography is thorough (1320 entries) There are also very complete author and subject indexes The reading of this book should be considered a "must" by every surgeon who expects to treat patients suffering from any type of burn

Horace E Turner

Surgical Clinics of North America Volume 22, Number 2, pp 317 647 69 Fig April, 1942 W B Saunders Co, Philadelphia

SINCE war efforts are so concerned with wounds, the combination of articles in this number is particularly happy, for it brings together (under the editorship of Dr Frank L Meleney material germane to the questions now at issue Dr Meleney contributes an article to Surgical Bacteriology, Dr Carl W Walter to Sterilization Dr Deryl Hart to Minimizing the Contamination of Operative Wounds Dr Alfred B Longacre writes on Accidental Wound Infections, Dr Harold D Harvey on Infections of the Skin and Subcutaneous Tissue Dr Roy D McClure on Infections of the Chest, Dr William A Altemeier on Surgical Infections of the Peritoneum, Dr Michael L Mason on Infections of the Hand, Drs Meleney and John S Lockwood on the Chemotherapy of Surgical Infections, and Dr Champ Lyons on Immunological Aspects of Surgical Infections Each of these articles is well written and contains up to-date instructive and practical material The volume concludes with some other important material which is not related to the principal theme Of these articles, Dr Arthur Krida's paper on congenital dislocation of the hip is excellent The interesting contribution by Dr John Russell Carty on the Use of X Radiation as an Analgesic Agent is of much practical and timely value and the much discussed Scalenus Anticus Syndrome is admirably analyzed by Dr K G Hansson The conclusions here are illuminating Dr Henry L Jaffe's article on Primary and Secondary (Renal) Hyperparathyroidism will prove of much interest A cumulative index completes the volume All in all this is an excellent and timely contribution to contemporary surgical literature and can be highly recommended

T

Cancer of the Face and Mouth Diagnosis Treatment Surgical Repair, Vilray P Blair, Sherwood Moore, and Louis T Byars 599 p 64 pl, 260 fig $10 C V Mosby Co, St Louis, 1941

THIS is an excellent work on the subject, comprising 30 chapters It evaluates from every point of view the therapeutics of carcinoma and the various factors governing same This reviewer heartily agrees with the statement of Dr J M T Finney who in his introduction states "The true value of a book is largely determined by the extent of the author's knowledge of the subject and experience in the early recognition and proper treatment of the problems under consideration, as well as the ability to present the subject matter in attractive and serviceable form" It is well known that views and opinions differ on the subjects under discussion, but the author's mature experience and the authoritative evaluation of the questions presented are truly worthwhile It is refreshing to note that in the main the authors have substituted the term "node" for "gland" This is as it should be The work is profusely illustrated The photography, in monochrome is exceptionally well executed The chapter on carcinoma of the tongue, floor of the mouth, and pharynx is very expertly presented The case illustrations bespeak the immense amount of material at the authors' command. All in all this is a worthwhile contribution to the surgery of malignancy The technic is thoroughly described This description is augmented by pen drawings which, while very exact, are just what they are intended to be sketches This is a good book, worth studying

M

Oral Surgery Sterling V Mead, D D S, M S Second edition 1315 p 553 illus, 7 col pl 63s Henry Kimpton, 1940

THIS large volume comprises 47 chapters and discusses oral disease from the point of view of surgery Oral bacteriology, surgical technic, the sterile field, anatomic relations etc, are discussed, and methods of extracting teeth treating fractures of the jaws, treating infections involving the mouth and neck, are outlined in detail Quotations from many original sources are included in the text Each chapter is followed by an extended bibliography. Those engaged in oral surgery will find this volume useful.

T.

Technic of Gastric Operations. Rodney Maingot, F.R.C.S. (Eng. xii, 240 p. 55 illus. 15s. Oxford University Press, London, 1941.

THIS splendid monograph by a well known author will be welcomed not only by surgeons interested in abdominal surgery in general, but by those specializing in gastrointestinal diseases as well. The whole field of operative technic in gastric surgery is concisely, yet adequately described. Pre- and post-operative treatment of these cases is duly stressed, and treatment of possible resulting complications is discussed. The author regards gastric ulcer as a precursor of malignant disease more often than statistics would seem to indicate. At the same time, evidence of healing by radiography, biochemical tests, and gastroscopy should be irrefutable before surgical treatment is finally ruled out, Maingot points out. The various operative technics are outlined. The importance of each surgeon's possessing a thorough knowledge of his own particular technic in order to achieve the most successful results is stressed. This is a very readable volume, beautifully illustrated, and will be of unquestioned value to the student, general surgeon, specialist, and others interested in surgical progress.

M.T.

Métodos Modernos de Amputação. Edmundo Vasconcelos (In collaboration with Edgard Pinto de Souza and José Gonçalves Filho.) 253 p. 258 fig. Companhia Editora Nacional, São Paulo, 1942.

THIS volume is timely and instructive. It will prove of great usefulness, not only to those who read Portuguese, but also to others, because the detailed descriptions of the technics of the usual amputations are graphically illustrated by exceptionally fine pen drawings. These plates, while not in color, are executed with such admirable clarity that every surgeon who performs, or who expects to perform, amputations will reap a great deal of benefit from a perusal of this work. The volume comprises six chapters: the first deals with general methods, the second with general principles of amputations, the third with the indications for amputations, the fourth embraces very comprehensively the technic of amputation and disarticulation of the upper extremity; this is followed by a chapter dealing similarly with the lower extremity. The final (seventh) chapter describes prosthesis in a complete and lucid manner. The bibliography is exhaustive, containing 498 references garnered from the literature of the past as well as from contemporary writings. This work can unreservedly be recommended to students and surgeons.

M. T.

A Short Practice of Surgery. Hamilton Bailey, F.R.C.S. (Eng.) and R. J. McNeill Love, M.S., F.R.C.S. (Eng.), fifth edition viii, 1016p. 880 illus, 116 col. 30s. H. K. Lewis & Co. Ltd., London, 1941.

THE fifth edition of this splendid work will be welcomed by general surgeons and specialists, as well as by students and teachers of surgery. The volume is profusely illustrated, and the colored drawings are of outstanding quality. The fundamentals of bacteriology and the specific infectious diseases are reviewed. A discussion of the various surgical problems in each type of regional disorder follows. The principles of operations are outlined. There are descriptions of the clinical diagnostic and pathologic anatomic features. The concluding section on orthopedic surgery is exceptionally excellent. The readability of this textbook, occasioned by the succinctness and general attractiveness of the authors' style, will make it popular with all who wish to have on their shelves a general volume on clinical surgery. The authoritative information embodied in this volume and the methods of approach are exemplary.

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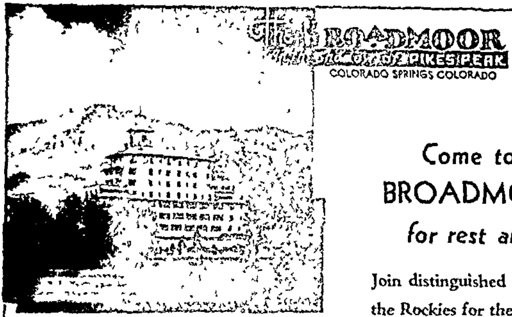

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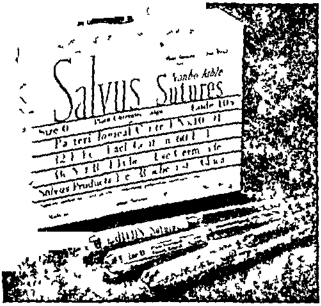

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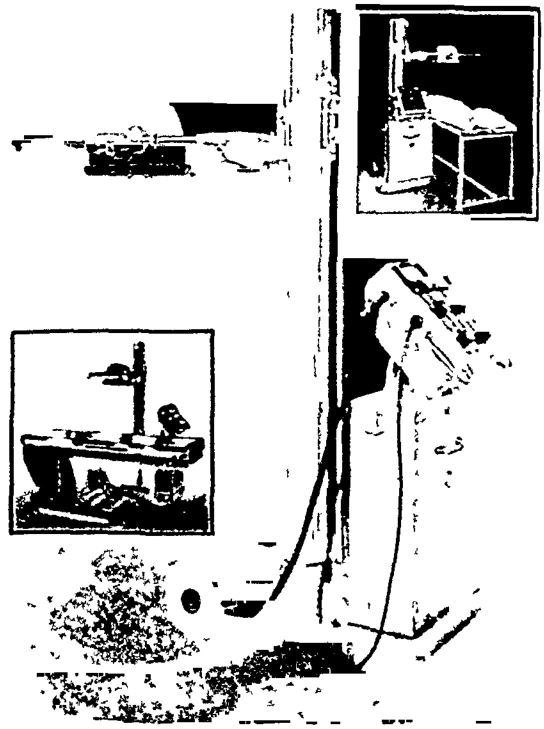

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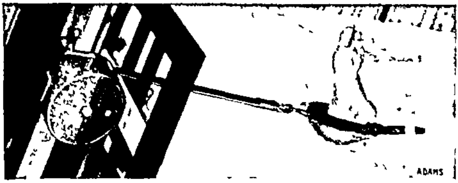

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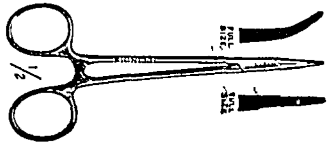

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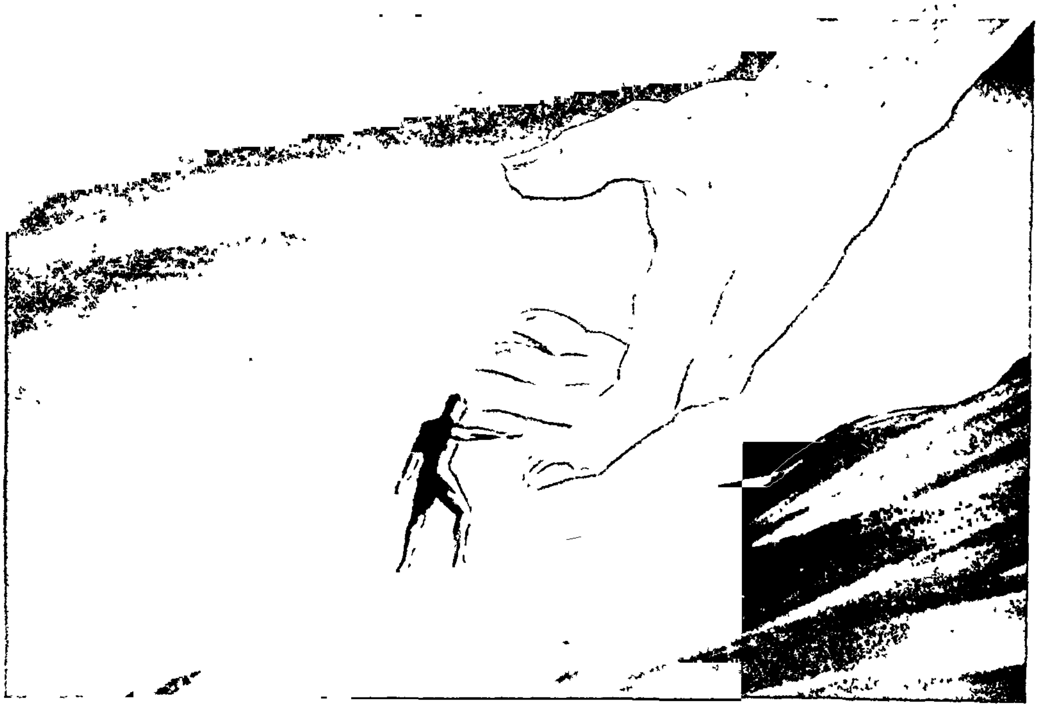

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The Journal of the *International College of Surgeons*

Volume V MARCH-APRIL 1942 *Number 2*

Editorials

The Advancement of Surgery of The *Stomach* in The Last Twenty-Five Years

in Europe and one or two clinics in this country. However, in this country it raised a storm of indignation and resentment that such a major procedure should be done for such a small lesion. The two main arguments against the operation were that it was too large and extensive a procedure, and that it had too high a mortality rate (the mortality twenty-five years ago ranged from five to ten per cent among various experienced and expert surgeons who had a great deal of surgical material.) The surgical profession at large was unalterably opposed to such a procedure, but gradually, as the results were shown, a number of the larger clinics changed their minds, acknowledging the wisdom of this procedure for this particular ailment.

It took about twenty years for the surgical profession of this country to realize that although this is a major procedure, in a large number of cases over a period of years it has fewer complications and less recurrence of ulcers, and effects a cure in ninety-five per cent of the cases, with good clinical end results. A great deal of the opposition was due to the fact that the profession at large would not admit that gastrojejunal ulcers occurred in about thirty per cent of gastroenterostomies until many long series of careful investigations had shown this to be sure in this country as well as in Europe. Once this was an established fact, the die-hards who opposed this treatment of surgery finally had to give in.

The operation of sub-total gastrectomy has been so standardized, especially in the last ten or fifteen years, that its mortality has been reduced to somewhere between one and two per cent in clinics throughout the country, and it shows a recurrence of gastrojejunal ulcer of not more than one per cent, especially when sixty or seventy per cent of the stomach has been removed in the original sub-total gastrectomy. The mechanical complications of sub-total gastrectomy are very few and are now so easily handled by Levine Tubes and Miller Abbott Tubes that when they do occur they play a very small rôle. Also, with the advance and modernization of spinal and intertracheal anesthesia the greatest factors in mortality and complications, which are bronchopneumonia and atelectasis, have been practically eliminated. There is still some question as to whether the Poyla operation for sub-total gastric resection ought to be an anterior mesocolic type or posterior mesocolic type. We believe that the posterior mesocolic Poyla type of resection gives the least mechanical complications and has been the best in our experience, especially when sixty to seventy per cent of the stomach has been removed.

As one looks back twenty-five years and sees that sub-total gastrectomy was done by only a few men in this country and Europe, and was looked upon as a great surgical stunt, and now sees hundreds of men in this country and Europe doing sub-total gastrectomies routinely for gastric and duodenal ulcers with a small mortality of one to two per cent, one must admit that this has been one of the greatest advancements and epochmaking strides in major surgery.

Alfred A. Strauss, M.D.

* * *

Teaching With Films

MAN, it has been said, is the animal that makes tools. It might well be added that man is wise in proportion to the extent to which he effectively uses the tool he makes, since the purpose of an implement is to facilitate the accomplishment of a specific task. We of the surgical profession have both a task and a problem which need not only a proper utensil but also an industrious use of it.

Our problem lies in the fact that in the field of medical education, as in the field of general education, there has come about in recent years a truly tremendous increase in educational traffic. Not only is the medical profession asked to teach increasingly greater numbers of undergraduate and postgraduate students, but it is also asked to teach more material. The further demand of these times is that this "more" shall be taught in *less* time and, still further, that last-word information on diagnostic and therapeutic technique shall be made available to our professional colleagues the world over. Oh, if someone would only contrive a tool with which to annihilate both time and space! Someone has. The tool is called the motion picture film.

As long as twenty-five years ago some members of our profession recognized the potential value of the teaching film. It so happens that the foremost independent pioneers in the field of medico-surgical films are actually Fellows of the International College of Surgeons. Perhaps for this reason, and perhaps because the need is so great, the medical profession as a whole looks to this great international congress of surgeons for information and guidance in the proper utilization of present day surgical films. Sensing this fraternal obligation, the College has created a special committee to correlate all available data on medico-surgical films and to appraise such films as are submitted for review. Such study of a film submitted would in no sense constitute censorship. It would merely make possible the listing of available films and the establishment of a central bureau through which arrangements could be made for the use of such films.

No teaching implement is so international in its utility, or so universal in its appeal. The adaptability of motion picture films makes them extremely useful, even when viewed in a country foreign to the author. By the simple insertion of Spanish and Portuguese titles they are ready for all Pan-America. Even with titles in English, such films are of interest and of decided value in a foreign country, since the pictures speak for themselves and their language is universal. No finer ambassador of good will can be found than this means of rendering reciprocally available technical information which might not otherwise be obtainable.

Many films of the kind we have been discussing have been made—many more are still to be made. Hence we feel it useful to point out at this time that such films are as much a part of medical literature as are our medical textbooks. Indeed, it is this writer's opinion that many of the medical textbooks of the next medical generation will be printed on celluloid instead of paper. Since it is a literature that we are creating, it should be subjected to the same selective and editing attention as any other textbook. And when it is found acceptable and useful it is entitled to just as generous a distribution. The International College of Surgeons is actively endeavoring to render a service to both the author of the film and the profession alike.

J. F. MONTAGUE, M.D.

The Treatment of Fractures of the Femoral Neck in the Aged*

HERMAN DE LAS CASAS, M.D., F.I.C.S.

CARACAS, VENEZUELA

FRACTURES of the neck of the femur in aged people were for years the dread of our Department. Sometimes we had satisfactory results, but we had many failures and even deaths. Many fractures considered similar, upon treatment, brought entirely dissimilar results. Sometimes what seemed an excellent result was later found to be a failure, the patient returning in a few months with a flattened femoral head and a painful hip. So universal were these failures that new treatments appeared one after another, each awakening loud enthusiasm and each bringing forth a series of optimistic papers, soon to fall into oblivion. Casts and manipulations, nails and pegs, grafts and screws, blind operations, and open operations came and went.

Perhaps no method of treatment was more successful than Smith Petersen's which is still used. At one time his nail seemed to be unanimously accepted. Many papers were published that took for granted the flanged nail but discussed only minor details, or accessory apparatus to guide the nail. The surgeons were exultant with the firm hold of the nail, even in the spongiosa of the femoral head, although to remove misplaced nails a powerful extractor had to be devised. Still in spite of the nail, our failures continued. We had to convince ourselves that the problem was not purely mechanical, but rather biological.

We reviewed the records and found the following:

1. Among the intracapsular fractures only the most lateral of the group resulted in satisfactory union. (Fig. 1).
2. In cases of unfavorable results a difference of opacity to the X-ray appeared between the head of the femur and the lateral fragment, that is the capital fragment appeared by comparison, progressively denser. (Fig. 2).

This observation suggested an explanation. In any fracture, in the course of repair, a congestion and decalcification occur. If one fragment does not present decalcification, but remains unchanged, while the other fragment becomes transparent to the X-ray, it is natural to conclude that the blood supply of one fragment has been destroyed. We concluded therefore, that in patients with medial fractures all or most of the vessels nourishing the head of the femur are severed, causing failure of union.

This hypothesis seemed tenable, as the distribution of the vessels of the femoral head indicated this supposition. To demonstrate this demanded direct examination of the fragments *in vivo.* As failure of union in medial fractures of the head of the femur often occurred, there was nothing to lose in performing an arthrotomy and examining the fragments. We found the lateral fragment presented the usual appearance with its

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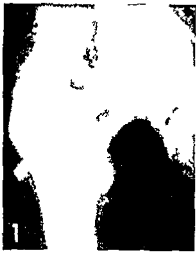
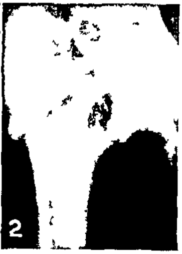
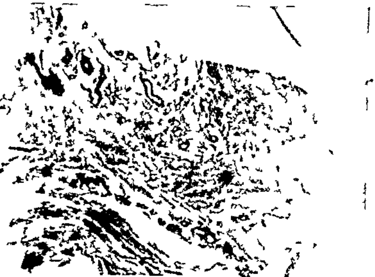
* Presented at the International Assembly of the International College of Surgeons, Mexico, D. F., [illegible]







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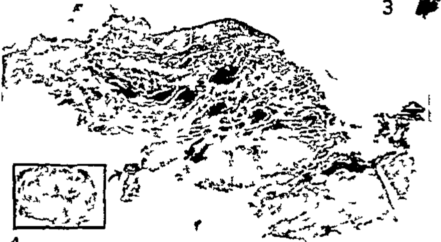

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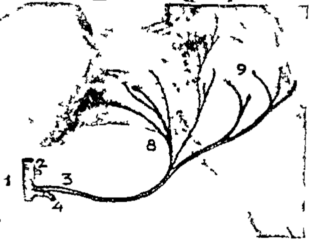

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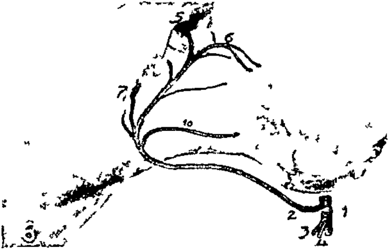

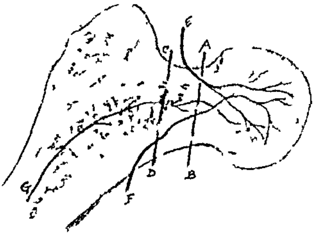

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Fig 1 Typical evolution of a lateral fracture after being grafted in which the function is normal Fig 2 Typical evolution of a medial fracture after being grafted The head is very dense, a pseudarthrosis is present, *and the lateral fragment* is displaced upward Fig 3 The round ligament at 20 years *of age* Many arteriolae can be seen Fig 4 The round ligament at 60 years of age There is only one small artery, with its lumen almost closed Inset The artery at larger magnification The useful lumen is almost non existent Fig 5 The anterior circumflex artery 1 Deep femoral 2 Origin of the posterior circumflex, 3, Anterior circumflex 4 Artery of the quadriceps 8 Anterior branches, 9 Anterior trochanteric branches Fig 6 The posterior circumflex artery 5 Nutrient artery of the trochanter 6 Superior branches of the head and neck 7 Posterior trochanteric branches 10 Inferior artery of the neck Fig 7 Schematic A line of fracture *passing by* AB will sever all the vascular connections of the head while one passing by CD will leave some branches untouched Any line of fracture severs the diaphysary branches (G)

spongy structures which bled easily, but the capital fragment appeared dry, and would not bleed, indicating ischemia.

The excision of the femoral head, used as a treatment in serious cases of arthritis with varying degrees of success, was nevertheless more successful than the results obtained in treatment of medial fractures by the classical methods. In medial fractures the stump of the femoral neck is long and should be able to support the acetabulum. To be sure the patient would walk with a limp but this is unimportant in view of some results obtained in attempting union. In any event excision would have the advantage of a short convalescence so important in aged people. Therefore, we decided to try excision. The pieces removed were given to Prof. Jaffé, Pathologist of the Moabit Hospital of Berlin, whom it is our privilege to have on our Staff. His report was: necrosis of the head of the femur.

There was the explanation and also the indication that the treatment should be individualized. In fractures of the femur with a living head capable of union it was correct to continue toward anatomical restitution. In fractures of the femur with necrotic head, on the contrary, the logical procedure would be to abandon the search for union and seek a purely functional result.

There are still many other reasons for individualizing the treatment. While some patients are strong enough to stand a serious operation, others are too weak to be exposed to such danger. The local conditions are also different in fresh and in old fractures, and this factor requires special consideration. Still other reasons may cause the surgeon to vary the treatment. To review them all would carry us too far afield, but we will report a broad outline of what we believe to be the most important.

According to the classical description, the femoral head receives its blood from two different sources; the artery of the *ligamentum teres* and the system of the *femoralis profunda.* This point is of considerable importance; if this be true, interruption of both systems is necessary if necrosis of the femoral head takes place. The interruption of the latter, by the line of fracture itself, is very likely to happen, but the interruption of the former would need lesions of the round ligament which, though occurring, are not frequent. We have found it sometimes evidently disturbed by the fracture and under the microscope occasionally these lesions have been confirmed. Yet this is far from being the usual case. Frequently if the ligament has no important vessels, the interruption of the system of the deep femoral suffices to produce the necrosis.

The ligament has been said to have an artery, issued from the acetabular branch of the hypogastric, ramifying in the femoral head and nourishing it. This data has been seriously questioned even in the adult. In the first place it is now considered the remnant of an atrophic muscle, the pubofemoralis. Even in the classical descriptions the artery is said to be absent in 30% of the cases, and to be often variable. Some authorities claim that its branches can be followed until their penetration in the femoral head, and others that the branches end in the fovea capitis.

We tried to put the artery in evidence by injections of colored and radioopaque matter in the acetabular artery but failed. In some instances we have seen an injection filling all of the vessels of the region, until it gave a homogeneous spot to the X-ray, without any liquid penetrating the ligament. In short, if the ligament has any artery, it is too thin to be studied by any method other than histological sections.

As to microscopical sections, the appearance is quite different in youth and in old age. In the former, there are many vessels, though no one worthy of the name "Artery of the Ligament." All are very thin arteriolæ with a very thick wall. (Fig. 3) In some specimens we have found more than thirty of such vessels. With increasing age the vessels disappear. At about sixty years of age, it is usual to find only one of these vessels, and generally its useful lumen is almost nonexistent. Still later in life there is no vessel left. (Fig. 4) As the vessels disappear, the tissue of the ligament also grows old. In youth there is much hyaline fundamental substance, but there are still many connective cells. In old age, there are no cells left.

We also found, in cases of fracture, signs of the ligament having been stretched. Many interstitial hemorrhages were seen to have been invaded by neocapillaries and young connective cells. In some instances the tissue was chondrified, proving that the tissue had been submitted to much friction.

In our opinion the vessels of the ligament are incapable of taking part in the nourishment of the femoral head, especially in old age. Therefore, the only vessels worthy of being considered in the physiopathology of the fracture of the femoral neck in the aged, belong to the system of the femoralis profunda comprised of the diaphysary vessels, the anterior circumflex, and the posterior circumflex.

The diaphysary vessels enter the interior of the bone from the nutrient artery of the femur, a branch of the deep femoral and pass from the diaphysis to the trochanter and the head.

The anterior circumflex, the direct or indirect branch of the deep femoral, describes in front of the trochanter an arc of medial and superior concavity. The anterior trochanteric branches which perforate the anterior aspect of the bone form the superior concavity, while the medial concavity is formed by the anterior cervical branches which perforate the capsula, enter the neck, and continue to the head. (Fig. 5)

The posterior circumflex originates from the deep femoral at a higher point than the anterior. It describes a similar arc in the posterior aspect of the bone, and ends in the digital fossa, becoming the nutrient artery of the trochanter. (Fig. 6)

As illustrated in Figure 7 any line of fracture of the femoral neck severs some vessels of the system of the femoralis profunda. The number severed determines whether there is an impoverishment in the circulation of the blood supply to the femoral head. In all fractures of the femur the circulation of the diaphysary branches is interrupted. Obviously the more lateral the fracture, the fewer other vessels severed. Conversely if the line of fracture is medial or passes close to the femoral head, all or most of the vessels are affected, resulting in interruption of the circulation.

In medial fractures and those close to the femoral head the suppression of the blood supply causes profound changes in the capital fragment. In the course of open operations performed in such fractures, one can readily see that the conditions of the fragments completely differ. While the lateral fragment presents the normal appearance of spongy bone, with the thinned trabeculæ which bleed easily as in any other fracture, the capital fragment appears dry and homogeneous and does not bleed. The cartilage is modified, discolored in places, exfoliated, and without elasticity.

Under the microscope the necrosis becomes evident. Figure 8 is a typical specimen showing the bony substance completely homogenized, with the fibrillar structure lost and the nuclei achromatic. Of course these characteristics are established progressively. In Figure 9 there is still a certain degree of fibrillar structure, while most of the nuclei are invisible.

It is also known that functional activity (pressure bearing) is a cause of calcification, while inactivity produces rarefaction. Every fracture is a seat of congestion, at least during the phase of repair.

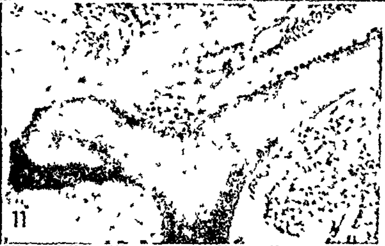
If the blood supply of the femoral head is completely interrupted, the capital *fragment remains* unchanged, while the lateral fragment because of the evolution of the fracture and the inactivity, suffers decalcification. Therefore, the head will appear denser than the lateral fragment. If the blood supply of the head is only diminished, the capital fragment will suffer real condensation, making this difference still more evident. Therefore, in every fracture in which the blood supply of the capital fragment is diminished or cut off, the head appears denser than the lateral fragment, but the condensation is not proportional to the degree of ischemia. The roentgenological picture (Fig. 10) illustrates the appearance of condensation of the capital fragment in comparison to the lateral fragment.

A graft, at the moment it is implanted, lacks vascular connections. However, it acquires such connections, and is able to live when it becomes incorporated to the tissues of the neighborhood. This raises the question of why a necrotic femoral head cannot acquire similar connections.

Invasion by the connective tissue is frequent. In figure 9 hosts of small round cells, with strongly stained nuclei can be seen. They are young connective cells from the block of connective tissue, which develops from the synovial membrane and neighborhood of the fragments. Unfortunately, the possibility of these cells reviving the head and producing useful union between the fragments is very remote and has no practical value. In open operations for fracture of the femoral neck one can plainly see that the lateral fragment rarely contributes to the formation of this connective tissue. The invasion of the bone comes from its surroundings. Therefore, if the fragments are well apposed and impacted, such invasion cannot occur, as the way to enter the femoral head is closed. If the fragments *are not impacted, there is little advantage* in the invasion of the femoral head by connective tissue. We have never seen the connective cells invading the bony substance proper, but only the medullary spaces. In figure 11 the connective cells stop abruptly beside the bony columns. It is logical to think that in the course of time, the process of osteoclasis will dissolve this bony substance, and the new-formed connective tissue will be transformed into bone. An aged patient, however, is not in condition to wait for such metaplasia to take place, as it is important to have the patient on his feet as soon as possible. Further on we will see the reasons for not counting on the consolidation, even in cases when the necrosis is not evident or complete. In conclusion we can say that all the data point to the fact that the revival of the femoral head, even if possible, has no practical value.

Evidently, while the femoral head occupies the acetabulum, the stump of the neck cannot be of any use to support the pelvis. It is exceptional when the neck, impacted in the femoral head, is capable of bearing the weight of the trunk. The direction of the femoral neck does not push it toward the head, but upward. At each step, the lateral fragment suffers an upward displacement or, what amounts to the same, the pelvis glides downward stretching the capsula and ligaments This condition is very painful and generally causes complete disability

At this point we would also like to emphasize that the direction of the femoral neck is perhaps the greatest handicap against the healing of the fracture If the stress were in the direction of the axis of the femoral neck, it would be a factor of union As it is almost perpendicular to this axis, it had a shearing effect, which hinders the union When



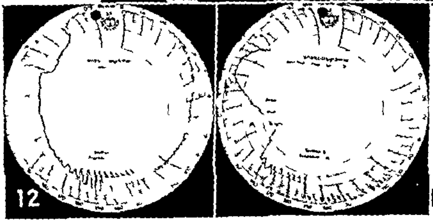


Fig 8 Histology of the necrotic head 1 Osseous substance, completely homogeneous 2 Achromatic nuclei 3 Marrow Fig 9 Histology of the necrotic head 1 Osseous substance, in which some fibrillar structure can still be recognized as well as some stained nuclei 2 Connective tissue invasion Fig 10 The condensation of ischemia The trochanteric part of the femur is very transparent to the X ray while the head is opaque Fig 11 The connective tissue invasion of the necrotic head The small round cells stop abruptly beside the bony substance Fig 12 Sphygmographic record of variability of the circulation of the femoral head left, a specimen poor in foramina, right, a specimen specially rich in foramina Fig 13 A specimen showing variations in the disposition of foramina

dealing with the subtrochanteric osteotomy we will say more on this point.

Frequently, in spite of the patient staying in bed and not submitting the lesioned hip to any mechanical stress, the pain is considerable, and the limb is profoundly disturbed by edema, local hyperthermy, marked muscular atrophy, pain, local sudoresis, and, most important, an increase of the oscillatory index as compared to the normal hip. Sometimes such conditions are very quickly improved by excision of the femoral head, and the infiltration of the joint with novocaine seems to have a definite action, plainly visible from the first moment by the modification of the oscillometry.

Sometimes after excision the stump of the neck will not support the acetabulum. This results in a mechanical condition similar to that before operation, although the aforementioned disturbances subside. Our interpretation is that the femoral head, by its mere presence, independent of any mechanical factor, acts as an irritant to the spine producing the phenomena studied by Leriche in the articular sprains, a sympathetic reflex whose origin is in the joint, whose termination is in the capillaries of the region, and whose point of reflection is perhaps in the spinal ganglia.

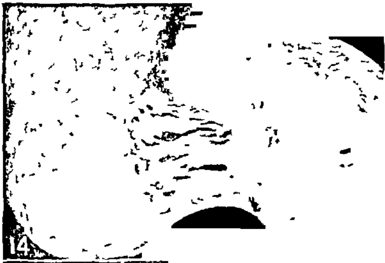
Since in some fractures the capital fragment becomes necrotic, while in other fractures it keeps its ability to unite, the treatment should be individualized accordingly. When union is possible it should be sought and when it is impossible it should be discarded and a purely functional result be sought. Therefore, the first step should be to classify the fractures.

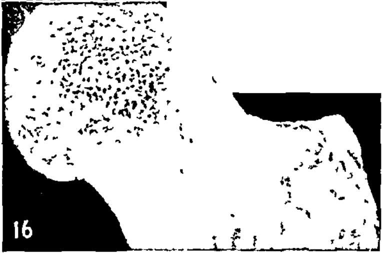
We know that the superior cephalic branches of the posterior circumflex enter the femoral neck very near the cartilage. Accordingly only subcapital fractures will belong to the medial variety, as any line of fracture lateral to the entrance of the vessels would leave them undisturbed and therefore allow a certain amount of circulation of the head of the femur. However, many fractures more lateral than these result in necrosis of the femoral head, as the disposition of the vessels has many individual variations. (Fig. 14, 15 and 16.) Also, as the patient grows older the vessels become progressively sclerotic and obstructed. Sphygmographic studies are of interest in this connection (Fig. 12 left and right).

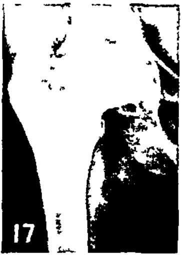
We are reproducing the photographs of two femurs. The first one (Fig. 14) is of an adult, and many grooves and foramina marking the entrance of vessels can be seen. The other one (Fig. 15) is of an aged patient and most of the depressions have disappeared. Evidently, the femoral head is in danger of ischemia and any further diminution will leave it without enough blood.

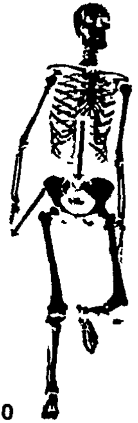
We know that necrosis takes place even though some vessels are left in the capital fragment. What we have not been able to decide is whether complete ischemia is necessary to cause necrosis of the femoral head, or that the vessels untouched by the line of fracture itself are lesioned in some other way, for instance, that the displacement upward of the lateral fragment stretches the vessels when entering the capital fragment. This is a point deserving careful study, because many surgeons do not immobilize this type at the time of fracture.

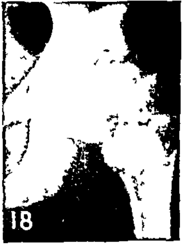
The most interesting point is not the necrosis proper. From a practical standpoint, the ability to unite is more important. And, evidently, there is need for much more circulation for the process of consolidation than for the mere survival of the femoral head. This is why, in spite of well conducted treatment, a living head of the femur sometimes fails to unite. With old people in

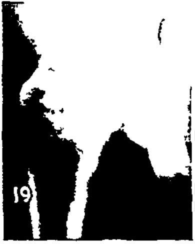












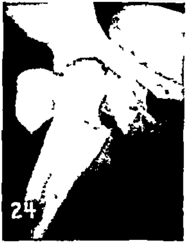


Fig 14 Femur of an adult *The vascular foramina are very large and numerous This specimen is richer in foramina than the average* Fig 15 Variability of the circulation of the femoral head A specimen specially poor in foramina Fig 16 The femur in old age The specimen was filed to be sure that no foramina were hidden under the periosteum and in the border of the cartilage The paucity of vessels is evident Fig 17 X ray of a fracture which in the beginning seemed to follow a favorable course of healing but later developed an aseptic necrosis Fig 18 The degree of condensation. The head is much denser than the trochanteric part of bone In this case there was an asceptic necrosis of the entire head plus a central spicule belonging to the proximal fragment Fig 19 Excision of the head The stump of neck long in sub capital fractures, serves as support to the acetabulum Fig 20 Normal person The weight of the body pushes the pelvis downward (upper arrow) The pelvis would oscillate around the supporting hip joint, but the pelvitrochanteric muscles (lower arrow) contract and impede *the oscillation* Fig 24 *The intratrochanteric osteotomy With this technique of* osteotomy the section is made in a large part of the bone having good circulation, the upper end of the lower fragment cannot be displaced medially by the traction of the adductor muscles

particular the mere ability to unite is not enough. There is little advantage in obtaining union at the price of long immobilization, causing deep muscular atrophy, which perhaps will not recede, and stiff joints, not to speak of the risk to life.

We are reproducing a significant X-ray picture of a fracture, (Fig. 17) which was dubious. As the head seemed to have some circulation, we sought an anatomic result. A synthesis was performed, with an autogenous graft and this brought about a good result. The patient was able to walk and was discharged. A few months later he returned. The limb had become atrophied and the hip was painful. The X-ray disclosed a shortened neck and a flattened and condensed head of the femur.

The interpretation seems to us to be that any fracture, as a focus of repair, passes through two different stages, namely, the phase of hyperthermy, during the proliferation of the connective tissue, and a phase of ischemia when the connective tissue contracts. In this patient the femoral head received just enough blood to survive. The increased blood supply made possible the union. However a later condition of ischemia caused the femoral head to become necrotic.

On the one hand we have the most medial fractures, in which the circulation is interrupted, the femoral head becomes necrotic and union fails. On the other hand we have the most lateral varieties, in which enough circulation is left to assure life to the capital fragment and union. Between these two extremes, there is a zone in which no such clear decision is possible. Fortunately, from the practical standpoint, the problem is simpler. The aforementioned data point to the fact that one should not seek union merely because it seems that the femoral head has some circulation, because if the circulation is not sufficient, necrosis will result and union will fail or be too slow. An open operation can be performed also, and the fragments examined directly. If they seem bound for union, the anatomical restitution is sought, but if the condition of the femoral head indicates ischemia, the functional result is preferable.

There is nothing surprising in our being unable to give a hard and fast rule. Here, as anywhere else, one is able to decide only after weighing carefully all the elements of the individual patient, especially those concerning his general condition. For instance, in dubious cases, when the patient is strong, one can perform the synthesis and if union fails, can resort to excision. On the contrary, if the patient is weak, a purely functional result is imperative, as there is no logical objection to excision of the femoral head. The results of this operation can be really satisfying, and as we see more results we are progressively inclined to advise it.

As previously stated the lack of sufficient circulation to the femoral head should be a reason to prefer the functional result. Therefore, the degree of the condensation has real importance in deciding the treatment. (Fig. 18) However in fresh fractures condensation loses some value because of the time necessary for its appearance. In thin patients with very good X-rays, we have sometimes been able to appreciate the condensation a few days after the fracture, but this is not the usual case. In brief the degree of the condensation is always important but the lack of condensation has little value in fresh fractures, unless the surgeon waits several weeks before operating.

In medial fractures the emptying of the acetabulum by excising the head permits the stump of the neck which is long to approach the cavity and present a point of support to its rim (Fig. 19). On the other hand it modifies the hip enough to bring important alterations to its physiology. The question arises whether the neck will stay in the acetabulum or become easily luxated. Experience shows that luxation is not frequent. Perhaps the reason is the ability of retraction of the connective tissue in aged people, together with the fact the shortening of the limb causes the patient to walk with abduction of the side operated upon, which changes favorably the direction of the stress. We pay no special attention to the shortening of the capsula. The only measure we take to assure the intra-acetabular position of the neck is to train the patient to walk with a slight internal rotation. In a skeleton the reason for this can be plainly seen.

Figures 20 and 21 demonstrate weight bearing in the normal person and in a person who has undergone excision of the femoral head, respectively. In the patient with an excision the gluteal muscles are too loose to give sufficient support to the pelvis. To avoid oscillation of the pelvis the line of gravity must be transported to the supporting side resulting in an ugly gait. However, the patient will be able to walk without pain, sit down, kneel, and to perform all the activities of old age. His condition is indisputably better than before the operation.

To correct the gluteal gait the lack of distance between the insertions of the gluteus medius, namely, the fossa iliaca externa and the trochanter must be re-established. To re-establish the distance we formerly transplanted the trochanter to a lower position on the femur. Now we prefer the subtrochanteric osteotomy which has many mechanical advantages.

Adduction of the femur causes the trochanter to lower and re-establishes the necessary tension on the muscle (Fig. 22). Unfortunately, the adduction increases the functional shortening of the limb. The ideal would be to have the upper part of the femur in adduction, lowering the trochanter, and the lower part in abduction, lengthening the limb. This is obtained with the subtrochanteric osteotomy. The bone is cut and the two fragments apposed forming an angle of lateral sinus. In this way, while the upper fragment is in adduction, the lower one is in abduction. Not only the tension of the muscle is re-established and the limb lengthened, but the conditions of weight bearing are improved (Fig. 23). The stress becomes axial to the femoral neck. This is a factor in strengthening the bone, which develops according to the pressure along its axis, and a guarantee against luxation.

As to the technique of the osteotomy, it can vary almost ad infinitum. We would emphasize two points, first we prefer a high osteotomy, almost a transtrochanteric osteotomy. In this way the cut is made in a spongy and large region of the femur. Second, as the lower fragment is pulled by the adductor muscles, we make the cut leaving attached to the upper fragment the medial part of the trochanteric region. (Fig. 24)

The osteotomy is not a serious operation and can be performed under local anesthesia. A disadvantage in the aged person is that it requires several weeks of immobilization in a cast. Therefore we perform the osteotomy only on patients with a satisfactory general condition.

We know that in lateral fractures, which comprise the extracapsular and some intracapsular fractures, both fragments have enough blood circulation to survive and unite. Therefore, the classic treatments, aiming at the anatomical restitution, should be used. We will treat the matter in short as we have only secondary details to present.

In the most lateral fractures, the extracapsular fractures, whose seat is a zone of easy impaction and rich vascularization, spontaneous consolidation is possible and frequently takes place, though in malposition. To reduce the displacement and to maintain the correction with a cast is feasible. Therefore, non-operative treatment should be sufficient. However, we are decidedly partial to operative treatment. There is no doubt that nailing or pegging keeps the fragments in place much better than a cast, so we see no reason to prefer the non-operative treatment, at least in the aged. Our experience has been that the immobilization in a cast is much more dangerous in the aged than the operation. For the last ten years, we have not used the non-operative treatment.

We are much less decided which to perform, blind or open operation. We like the blind operation as it diminishes shock. The method requires long preparation (répérage, roentgenograms, etc.) during which the patient must be on the orthopedic table, but as they are not being submitted to any aggression, even weak patients endure the strain easily.

We have used several models of guiding apparatus, some destined to guide the nail or peg itself, some to guide a Kirschner wire which, in turn, would guide the nail. We even constructed a model of such apparatus, which we abandoned as well as others.

Still we consider the Kirschner wire necessary. If a nail is misplaced and withdrawn two or three times, the damage produced in the femoral neck and head is considerable. The wire, on the contrary, can be placed and taken out many times without inconvenience. Another advantage is that a second wire can be placed without taking out the first, judging the correct position by the direction of the first.

We draw on the skin of the patient at the upper extremity of the bone and place the nail "free handed." Afterward, we control by X-ray in both planes. If the nail is not well placed, the operation is repeated until the nail is satisfactorily placed. The length of the nail need not be exact.

To discuss autogenous or metallic synthesis as it deserves would carry us too far afield. We have published other papers on the tolerance of the bone for foreign materials, in which we endorse the autogenous material.

In metallic synthesis the nail can be firmly embedded the first day, but the bone reacts with congestion thinning the trabeculæ, hence loosening the nail. (Fig. 25) We generally extract the nail after it has fulfilled its role and constantly find it loose. That others have had the same experience is proven by the invention of other pieces to fix the nail.

In contrast to the coxa vara, pseudarthrosis can be the result of medial or a lateral fracture of the femur. As in any other pseudarthrosis, in order to re-establish circulation in the fragments to promote union, it is necessary to freshen the fragments. Another very frequent feature of pseudarthrosis is the reabsorption of the femoral neck, the head and trochanter appearing as without neck. Therefore, one cannot judge if the fracture is lateral or medial by the shape of the fragments alone. In any event the trochanter appears as in a medial fracture, and the head as in a lateral fracture.

Condensation, here, has its full value. If the femoral head appears condensed, it is necrotic. If it is transparent to the X-ray it is living. We affirm that whatever be done, this reaction of the bone will take place. The act of implanting the nail breaks trabeculæ and severs small vessels, causing a small hemorrhage

Fig 21 Patient with excised head The gluteal muscles are too loose to support the pelvis To avoid the oscillation, the subject has to transport the line of gravity toward the supporting side Fig 22 The correction of the gluteal gait Right hip joint the excision of the head places the trochanter very close to the ilium Left hip joint the subtrochanteric osteotomy re establishes the position of the trochanter Fig 23 The correction of the gluteal gait The subtrochanteric osteotomy besides lowering the trochanter, compensates the shortening of the limb and improves the weight bearing by approaching the line of gravity to the axis of the neck Fig 25 Metallic synthesis The implantation of the nail necessarily breaks some trabeculæ producing a hyperthermy which decalcifies the bone around the nail In some cases this reaction is considerable Fig 26 Instruments for bone grafting including Dowel shaper, mounted on bearing in an oil casing, cutters (three toothed) piece for holding the bone square shaft for guiding the piece for holding the bone and making it advance straightly coupling for the motor, "Clé de Stuyt" with a canal along its axis for the Kirschner wire Fig 27 Coxa vara traumatica Fig 28 Pseudarthrosis with necrotic head The condensation is plainly visible Fig 29 The fusion of the hip In pseudarthrosis with reabsorption of the neck be the head living or necrotic we make a fusion of the hip by freshening the acetabulum and the trochanter Fig 30 Pseudarthrosis with living head When reabsorption of the neck is present, an anatomical result should not be sought

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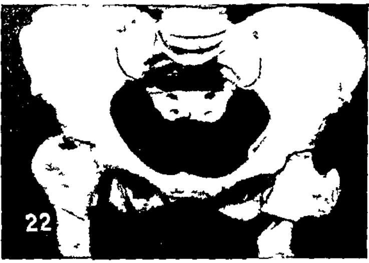
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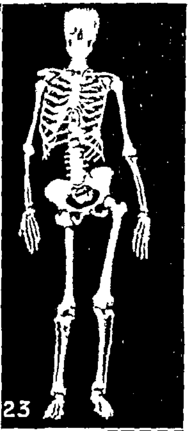
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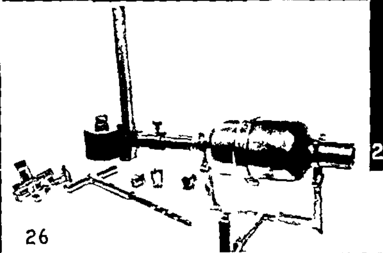
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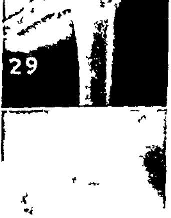

around the nail. This hemorrhagic focus is organized with vasculoconnective tissue. The process of organization brings some hyperthermy. The congestion, according to the most general law of bone physiology, brings rarefaction, thins the trabeculæ and loosens the nail. Once the nail is slightly loose, the feeblest movement breaks a few more trabeculæ, causing new hemorrhages and so the process repeats *ad infinitum.* As it can be readily seen, this reaction is impossible to avoid especially with as large a piece as the flanged nail, which takes a firm hold because of its large surface of contact with the bone. If this inconvenience cannot be avoided, the only way of curing the difficulty is to render it harmless or to make it useful. This is what happens with the autogenous graft. The vasculoconnective neoformation is justly the agent of incorporation of the graft to the neighboring bone.

The added traumatism of taking the graft is the disadvantage of the operation with autogenous material. On this account, we still use the metallic nailing when the patient is weak and every effort must be made to diminish shock.

We like the blind operation using the Kirschner wire as guide. The flanged nail that we use is the Sven Johansen's model, too well known to be described. For the autogenous peg, we do a similar operation, using a twist drill we had constructed, which has a canal for the Kirschner wire along its axis.

To take and turn a graft we devised a set of instruments, derived from Albee's bone mill, but with some distinctive features (Fig. 26). The motor is ¼ H. P.; the axle on the shell to which the shaft of the motor is coupled is mounted in two double ball bearings; the dowelshaper, instead of being mounted in fiber or bronze washers, is mounted on ball bearings in an oil casing; the piece of bone to be shaped is not held by the hand, but advances directly on a square rail, and so forth. In short, it has many added features that ease the work and make it extremely precise. With this set preparing the graft is a matter of a few minutes.

Both operations, autogenous and metallic synthesis, are performed under local anesthesia.

Immobilization by plaster cast is, doubtless, very useful and an added guarantee. Generally, we make one but we are ready to discard it if it causes any trouble. It is here we appreciate the superiority of the autogenous graft. As the time passes, the union is firmer and the cast less necessary. With the metallic nail, on the contrary, the union is very firm at the beginning, but during the long period the fracture is not yet united the nail becomes loosened.

In summarizing the treatment of recent fractures, in medial fractures having necrosis of the head and indicating excision, we perform in strong patients excision and osteotomy and in weak patients, excision alone. In lateral fractures having survival of the head and indicating synthesis, we perform in the strong patients autogenous synthesis and in the weak patient, metallic synthesis.

The conditions in old fractures differ from those in fresh fractures enough to need another method of treatment. An old fracture will need treatment under two conditions, because of malunion, union in vicious position and because of non-union.

Malposition is well known; it is the coxa vara traumatica, or diminution of the angle between the shaft and the neck of the femur. (Fig. 27). Only the lateral fracture is capable of union. Therefore, the coxa vara traumatica will always be the result of a lateral fracture with a living head.

Its physiopathology is similar to that of patients with excision of the head, elevation of the trochanter causing gluteal insufficiency; shortening of the limb and defective weight bearing. Here, as in excision of the femoral head, the subtrochanteric osteotomy re-establishes the function of the muscles. Also, by the abduction, it corrects the shortening and improves the weight bearing. The only difference is that, of course, the operation is performed without the excision of the head.

Pseudarthrosis with necrotic head is similar to the fresh fracture in that union cannot be expected (Fig. 28). The head of the femur has to be excised. If the femoral neck is conserved, according to the degree of strength of the patient, the excision is performed alone or with the osteotomy.

If the neck is reabsorbed, there is no support for the acetabulum. If we place the acetabulum over the tip of the trochanter, the slightest movement of abduction will luxate it. Perhaps, in young patients, some sort of "roof," to enlarge the rim of the acetabulum could be devised. In the aged patients something simpler must be sought.

It is well known that an ankylosis of the hip results in good function, with only some difficulty in sitting down. In arthritis, most of the unfavorable results are rigidity without true ankylosis and an arthodesis improves the condition. According to these considerations, we freshen the acetabulum and the tip of the trochanter, and place one against the other, seeking union (Fig. 29). We formerly used a graft, but we have seen that direct union is more satisfactory because it is stronger.

Pseudarthrosis with living femoral head follows a lateral fracture. The survival of the head makes the union possible, but here also the conditions differ from the fresh fracture and require special treatment.

In our opinion, the conduct should vary primarily according to the degree of reabsorption of the neck. If the neck is conserved, good restitution is possible and a synthesis should be performed. If the neck is destroyed, an anatomical restitution is impossible (Fig. 30).

In the case of conservation of the neck, the operation differs from the synthesis as performed in the fresh femoral fractures, as both fragments are independently healed, and have to be freshened. Therefore, it must be an open operation, with arthrotomy.

We take advantage of the arthrotomy to place the graft from the inside of the fracture, instead of placing it from the lateral aspect of the trochanter. We make a separate perforation in each fragment, starting from its freshened surface. We insert the graft in the capital fragment, with the limb in external rotation. Then, by rotating the limb inward, we present the hole in the lateral fragment to the graft, engaging the latter in the former. In this way, the cortex of the trochanter is not interrupted, and the graft has no possibility of gliding laterally.

If the neck is reabsorbed, the synthesis will not re-establish the mechanical conditions of the hip. In both medial and lateral fractures, we cause an ankylosis of the hip by freshening the trochanter and the acetabulum and placing them in apposition.

We have presented the results of ten years observations on this subject. To close we will say that all these techniques will probably be forgotten, but we believe that whichever be the methods of the future one principle will persist, the individualization of the treatment.

SUMMARY

Generally speaking while all intracapsular fractures are considered from a general point of view the results of surgical treatment are variable. An

analysis of the failures following surgical treatment disclosed:

(a) That failures were noted with greater frequency in medial fractures.

(b) In cases of non-union there was progressive condensation of the head of the femur.

Such condensation engendered the thought of a possible ischemia in this region. This was verified by a study of the local circulation, the underlying features of which were herein reported. An attempt was made to establish whether or not blood irrigation through the ligamentum teres was interrupted in some manner in instances under consideration. The different directions of the lines of fracture were studied and their possibilities of interrupting the circulation through the circumflex arteries kept in mind. The results were as follows:

(1) In young individuals the ligamentum teres carries numerous blood vessels. These are thin and in all likelihood unable to contribute to the nourishment of the head of the femur. In the aged, the vessels disappear and their lumina become obliterated progressively; thus their contribution to the blood circulation in the head of the femur is *nil.*

(2) The arterial system of the circumflex is disposed in such a manner that the blood enters from without inward. In any type of fracture here some vessels are severed. These pertain particularly to those already having entered the bone. The most medial fractures interrupt all the vessels while most lateral breaks leave some blood vessels untouched.

(3) In the most medial fractures the head of the femur suffers an ischemic necrosis characterized microscopically by homogeneization of the osseous substance and achromatism of the cellular nuclei. Changes in the connective tissue invading the necrotic head are described.

(4) The individual variation in the vessels of the hip are discussed. Interruption of all vessels in order to cause necrosis is not essential. A precise line of demarcation between both varieties of fracture is made difficult for reasons given; it may be found somewhere in the mesocervical portion of the neck of the femur.

(5) The therapeutic indications and results in both types of medial and lateral fracture are discussed.

(6) Methods of treatment in lateral fractures by synthesis are given. Preference is given to autogenous grafts instead of metallic synthesis. The indications for each are pointed out.

(7) An analysis of indications and therapeutic measures of old fractures and pseudoarthrosis are given.

RESUMEN

Advirtamos: a/ que la extensión de este resumen no permite consignar ningún razonamiento, sino apenas el Plan del Trabajo; b/ que solo tratamos del anciano.

Durante años, temimos mucho a esta fractura: casos considerados semejantes evolucionaban de modos opuestos, i casos que salían aparentemente curados volvían, meses despues, con cojera.

Los records de estos casos nos mostraron: a/ que mientras mas interne la fractura, mas fácil era el fracaso; b/ que los casos adversos presentaban signos radiológicos de condensación del fragmento cafálico.

Sospechamos necrosis isquémica por ruptura vascular, i decidimos artrotomizar los casos que parecían destinados al fracaso. Comprobamos la isquemia de la cabeza, comprobamos macroscopica e histologicamente la necrosis; el estudio angiológico de la región, con soluciones colorantes i radio-opacas nos mostró el mecanismo de la isquemia i su

relación con la situación interna del rasgo.

Formulamos el principio básico: Los vasos nutricios de la cabeza corren de fuera a dentro, *penetrando el hueso* en diversos puntos del cuello. El rasgo rompe todos los que, a su nivel, hayan penetrado en el hueso. Una fractura externa respetará, pues, los que aun no hayan entrado, i la cabeza tendrá irrigacion. Una fractura mui interna seccionará todos los vasos, dejando la cabeza sin circulacion.

Consecuencia Terapeutica: en la fractura interna, la cabeza se necrosa, i no puede soldarse; en la fractura externa la cabeza sobrevive, i la consolidación es posible.

En las Internas, decidimos resecar la cabeza femoral, i apoyar el cótilo sobre el muñón de ecuello; en la Externas, seguimos practicando le Síntesis, buscando la soldadura.

Ahora bien: la resección de cabeza permite una marcha ágil e indolora, pero con una cojera por insuficiencia de los pelvitrocantereos; el trocanter queda mas alto, i las inserciones de dichos músculos demasiado cerca las inferiores de las superiores.

La Osteotomía Subtrocanterea, haciendo bajar el trocanter, restablece la tensión de los músculos, corrigiendo la cojera.

En los sujetos fuertes, pues, agregamos la Osteotomía a la Resección. En les Débiles, solo hacemos la Resección, conformandonos con la cojera.

En las Fracturas Externas (que comprenden algunas de las clasicamente llamadas Intracapsulares), la cabeza sobrevive, puede soldarse. Hacemos una fijación operatoria (Síntesis), a la que tememos menos, en el anciano, que a la inmovilización.

Preferimos la operación con un ingerto autógeno, i así la hacemos en los fuertes. En los débiles, para economizarle la toma del ingerto, nos conformamos con un clavo metálico.

Eso, respecto a las fracturas recientes, en las cuales, como se vé, consideramos por lo menos cuatro casos típicos.

En las Fracturas Antiguas, distinguimos: Pseudartrosis i Coxa Vara Traumática.

La Coxa Vara Traumática (que solo puede ser de la Fractura Externa) tiene la misma fisiopatología que la Resección de Cabeza: ascenso del trocanter, insuficiencia muscular i cojera.

La tratamos, pues, de la misma manera: Osteotomía Subtrocanterea.

La Pseudatrosis puede ser tanto de Fractura Interna como de Externa.

En la Interna, hai que resecar la cabeza, como en la interna reciente. Si el cuello está real sorbido, no hai muñón para apoyar el cótilo: provocamos la *soldadura entre cotilo i trocanter, avivandolos.*

Si el cuello está conservado, procedemos como en la reciente: Resección con o sin Osteotomía.

En la Externa, con cuello conservado, procedemos como en la reciente. Solo que, como cada fragmento está cicatrizado independientemente del otro, hai que avivar. La síntesis se hace, pues, con artrotomía, a cielo abierto.

Si el cuella está reabsorbido, la síntesis no deja la extremidad superior del femur en buenas condiciones mecánicas: preferimos proceder como en la interna, i soldar cotilo i trocanter.

Tales son los casos típicos que exijen terapéuticas especiales. Hai, naturalmente, muchas particularidades mas, especialmente en los casos limítrofes entre una i otra variedad, que hacen individualizar mas aún el tratamiento, pero tratarlas nos llevaría demasiado lejos.

CUADRO DE LA INDIVIDUALIZACION TERAPEUTICA

1. *Fracturas Recientes*
   - A/ Internas
     - a/ buen estado general = Resección + Osteotomía.
     - b/ mal estado general = Resección (solamente).
   - B/ Externas
     - a/ buen estado general = Síntesis Autógena.
     - b/ mal estado general = Síntesis metálica (sigue).
2. *Fracturas Viejas*
   - A/ Pseudartrosis
     - a/ Fractura Externa
       - i/ cuello conservado = Síntesis
       - ii/ id. reabsorbado = Anquilosis
     - b/ Fractura Interna
       - i/ cuello conservado = Resección
       - ii/ cuello reabsorbido = Anquilosis
   - B/ Coxa vara traumatica (solo Fr. Externa) = Otseotomía Subtrocanterea.

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Perforation In Peptic Ulcer

A CRITICAL REVIEW OF 700 CASES*

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INTRODUCTION

THE subject of peptic ulcer is one which holds much interest both for the surgeon and internist The most circumscribed specialist cannot remove himself from the problems of peptic ulcer, for he frequently has one even though he does not treat them It has been suggested that peptic ulcer is present in nearly two per cent of all individuals between the ages of twenty and fifty This figure must be regarded as a rather broad assumption, which cannot be adequately substantiated, but it is suggestive of the general prevalence of this disease

The symptoms of peptic ulcer vary greatly There are even cases in which hemorrhage or perforation has occurred without the patient's ever having been conscious of the symptoms which are usually considered characteristic of this disease

The cause of peptic ulcer is unknown That several factors working together may be responsible is possible In our present state of knowledge we must admit that such medical management as is advocated is usually done with the idea of correcting certain evident disturbances of gastric physiology, rather than being directed at the essential etiological factor or factors There is no standard surgical treatment for peptic ulcer Such surgical therapy as is commonly applied is largely confined to an attack on those complications which threaten the life of the patient by starvation, hemorrhage or peritonitis

In the present discussion, I shall confine myself to a consideration of the complication of perforation of peptic ulcer, and present some of the interesting data compiled from a review of 700 cases of perforated peptic ulcer which were operated on in the Cook County Hospital from 1925 to 1938 inclusive This group included perforations in the stomach or duodenum which occurred as a result of a benign ulceration In a recent publication, my associate, Dr Raymond Hedin, and I[8] reported on a series of 133 perforations occurring in 3289 cases of gastric carcinoma

HISTORY

The first clear cut report of a perforated peptic ulcer that I have been able to find in the literature was made by Boneti[2] in 1679 It is interesting that the patient was recorded as having spit up blood on a previous occasion, although no other symptom relative to a pathologic condition in the lungs was found The patient was apparently cured of this hemorrhagic condition when he later developed a perforation The author speaks of finding a free, watery fluid in the peritoneal cavity and a perforation near the pylorus upon opening the abdomen after the patient's death

John Abercrombie[1] published a paper in 1824 in which he reported a perforated duodenal ulcer along with several cases of perforated gastric ulcer The immortal French pathologist, Cruveilhier,[3] published a text of pathological anatomy in 1829, in which he clearly differentiated between simple peptic ulcer and ulcerating carcinoma.

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*Read before the Nebraska State Medical Association Lincoln Nebraska May 7, 1941

The first recorded attempt to close a perforated peptic ulcer was made by Mikulicz[9] in 1880. The patient died following the operation. No further reports of efforts to deal with this peptic ulcer complication are to be found in the literature until 1892, when Heussner and Roux[6] reported a successful repair of a perforated ulcer. A series of 103 operations for perforated peptic ulcer was reported in 1897 by Mikulicz.[9]

INCIDENCE OF PERFORATION

It has been stated that about five per cent of the proved ulcers of the stomach and duodenum ultimately perforate. Perforations occur somewhat more often in the duodenum than in the stomach. The literature reveals that gastric ulcers are found with equal frequency in males and females, while duodenal ulcers develop three or four times as frequently in men as in women. In this series of 700 cases of perforation there were only eleven females. No adequate explanation can be offered for the preponderance of perforations in the male.

The incidence of perforations in the white, black and yellow races corresponds very closely to the relative percentage of these racial groups in the population of our hospital.

We had no perforations in children under sixteen, and none in persons over eighty. Smythe[12] has reported two fatal perforations of gastric ulcers in premature infants, while Tow[14] has reported a fatal gastric ulcer perforation in a full term male child. In our series, 548 (78.2 per cent) of the perforations occurred in persons between twenty and fifty years of age. (See figure 1.) It might be interesting to speculate on the cause of the increased incidence of perforation in the twenty to fifty year age group. The one pertinent finding in this age group, either with or without ulcer, would seem to be the normally high hydrochloric acid values of the gastric secretion.

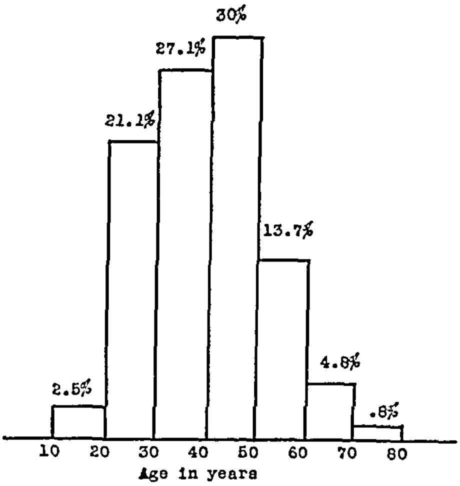

Figure 1. The incidence of perforated peptic ulcer according to age groups.

The location of the perforation in this series corresponds very closely to the findings published by Portis and Jaffe[10] in their study of necropsy records in Cook County Hospital. Ninety-four and five-tenths per cent of the perforations were on the anterior wall of either the duodenum or stomach; 50.5 per cent occurred in the duodenum and 49.5 per cent in the stomach.

ETIOLOGY

The opinion commonly expressed in the literature is that a full stomach predisposes to perforation, and Yudin[16] states that most of the perforations observed by him followed very closely after the midday meal. In our series, 328 (46.8 per cent) perforated within three hours after meals, while 270 cases (38.5

per cent) perforated in the period of three to six hours after meals (See figure 2) We had one case in which a perforation occurred during a fluoroscopic examination The patient had just finished drinking a glass of barium emulsion when the symptoms of perforation appeared Since the compilation of this report, the author has seen two additional cases which perforated following the ingestion of barium preparatory to a fluoroscopic examination Singer[11] collected 38 cases that perforated soon after fluoroscopy

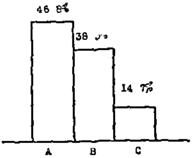

Figure 2 Time interval after food ingestion in relationship to perforation A 3 hours or less since last meal B 3 6 hours since last meal C 6 20 hours since last meal

Forty five of the patients in our series gave a history of their perforation having taken place while they were drinking either beer or whiskey This would seem to be more than coincidental, if one were inclined to advocate temperance, this might be used as an impressive lesson

The statement has been made that from a pathological standpoint only chronic ulcers perforate Yet one must bear in mind that there are probably some ulcers which progress so rapidly that the acute symptoms of perforation are the first intimation the patient has of gastric disturbance In support of this statement, we found that 168 (24 per cent) of our cases never were clinically diagnosed as ulcer, nor did the patients give a history of being conscious of any previous stomach trouble

Perforation may occur, irrespective of the patient's activity Three hundred and fifty nine of our patients were at rest, but not asleep, when their perforations took place, while 90 cases were actually asleep and were awakened by the characteristic excruciating epigastric pain (See figure 3) Thus it will be seen that these two groups represent 60 per cent of the total number and strongly suggest that in most instances physical activity has little to do with perforation As a corollary to this, we did not have a single case where actual trauma precipitated perforation

SYMPTOMS

We have referred already to the fact that perforation may be the first indication of the existence of an ulcer This, however, is the exception and not the rule, for most patients give a history of long continued suffering from a "dyspepsia" syndrome When perforation occurs, the symptoms are usually classical Approximately 98 per cent of the patients of this series presented what might be termed typical pictures A cause for confusion in the diagnosis of perforation exists in the fact that the patient is frequently not seen until several hours after the perforation, when considerable modification of symptoms with masking of the picture may have taken place At the time the perforation occurs, the patient is usually seized with

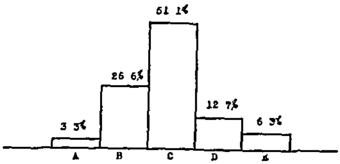

Figure 3 Activity at onset of perforation A Straining violently B Exerting moderately C At rest but not asleep D Asleep E Eating or drinking

a sudden severe pain in the epigastrium. This pain at first is colicky in nature and there are often remissions of intensity. The individual will frequently flex the legs as the pain reaches its height, but I do not ever recall having seen one toss about or move violently during the exacerbations of pain. In the initial period, the patient is usually excited and noticeably apprehensive. This psychic state changes somewhat with the appearance of shock. At this stage he frequently lies quietly on his back, often with his knees flexed, and his excited, apprehensive manner gives way to one of resignation.

Considerable attention has been directed to the diagnostic value of vomiting in these cases. One author has suggested that, as a rule, vomiting occurs only when the lesion is in the stomach or when the pylorus has been affected in the case of a duodenal lesion. In this series, 381 (54.8 per cent) vomited at the time of perforation. Of those that vomited, the lesions were found to be equally distributed between the duodenum and stomach.

Another statement which is seen very frequently is that bleeding ulcers do not perforate. We found that 22 cases (3.1 per cent) had hematemesis with the onset of the pain of perforation.

Physical examination of a patient following perforation usually reveals him as an evidently sick individual in a condition of shock which may be marked or slight. His respirations are rapid and of the thoracic type. The temperature varies with the degree of shock. A rather unexpected finding in this series was that the pulse rate was usually normal, or within normal limits in the early period following perforation. With the onset of peritonitis, however, both temperature and pulse rate tend to increase. From these findings one may conclude that so far as diagnosis is concerned, neither the temperature nor the pulse rate is of much significance in the first few hours following perforation.

Tenderness is usually marked and most acute over the epigastrium, with limited areas which may be more sensitive than others. It is rare to find the patient able to consistently indicate a finger point area of tenderness. In this series, it was not uncommon to find a well defined tenderness in the right lower quadrant. This frequently appeared within a short time following the perforation and led in more than one instance to a mistaken diagnosis of acute appendicitis. The frequency of this right-sided tenderness can probably be accounted for by the ease with which the escaping gastro-intestinal contents follow along the mesentery of the right half of the colon. In an article by Vaughan and Singer[15] the statement is made that no less an authority than Moynihan made right lower quadrant incisions in eighteen cases out of a series of forty-nine patients with perforated peptic ulcer.

The rigidity of the abdominal wall has been described by many authors as being board-like. It is my impression that in most cases this term is misleading, for while the abdomen is commonly tense and frequently scaphoid in the thin patient, it can hardly be regarded as board-like. The upper abdomen is nearly always more rigid than the lower abdomen in the early stage, and in the late stage with beginning peritonitis there is usually the element of distention of the intestines which more or less cushions the abdominal wall and precludes the interpretation of a board-like rigidity.

Of the 700 patients reviewed 374 (53.4 per cent) had a fluoroscopic examination. Of those examined by this method 77.5 per cent (290 cases) were found to have a pneumoperitoneum. (See figure

4.) Certain cases do not show pneumoperitoneum in the presence of perforation. This can be accounted for by the fact that some stomachs do not contain air at the time of perforation and the duodenum is not uncommonly collapsed.

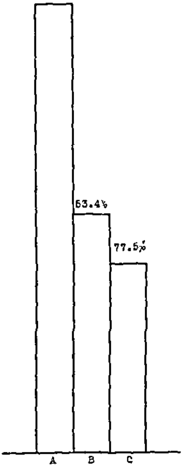

Figure 4 Abdominal fluoroscopy as a diagnostic aid in perforated peptic ulcer A Total cases operated B. Cases subjected to abdominal fluoroscopy. C. Cases showing a pneumoperitoneum

TREATMENT

When a diagnosis of perforated peptic ulcer has been made, there is rather universal agreement among surgeons that operation at the earliest possible moment is imperative. The protagonists of surgical management are well supported by the statistics presented by Thompson[13] in his review of a series of 500 patients from the charity services of Los Angeles hospitals. He reported that 76 cases were managed on the non-surgical or expectant treatment basis with only one recovery—a mortality of 98.6 per cent.

Notwithstanding the uniformity of opinion as to the value of early surgical intervention, there exists no such unanimity as to the type of operation which should be done in each case. We believe that the chief concern of the surgeon in dealing with a perforated peptic ulcer is to treat the emergency. It must be emphasized that the treatment is primarily for a complication and not for the underlying ulcer itself. The simplest procedure which will stop the leakage from the stomach is the most logical one. This would be simple closure, or if this were impossible, then local excision and suture. If either of these is likely to cause a pyloric stenosis, a gastrojejunostomy is indicated, provided the patient is in good shape. Cases must be individualized and not dogmatized.

In 612 cases in this series, simple closure of the ulcer was done. Simple closure with the addition of gastrojejunostomy was performed in 53 cases. Some form of pyloroplasty was em-

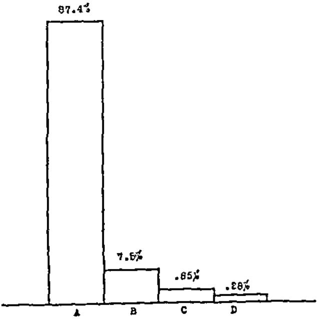

Figure 5 Percentage of various operative procedures used A. Simple closure of the perforation B Gastrojejunostomy combined with simple closure C Pyloroplasty. D Gastric resection

ployed in six instances; and primary partial gastric resection was done in only two cases. (See figure 5.) Under "simple closure" is included the excision of the ulcer base followed by closure. It seems to me that it is just as easy and perhaps a little less time-consuming to cut out a diamond shaped area just large enough to circumscribe the ulcer area, and then sew the diamond transversely. (See figure 6a, b, c, d.)

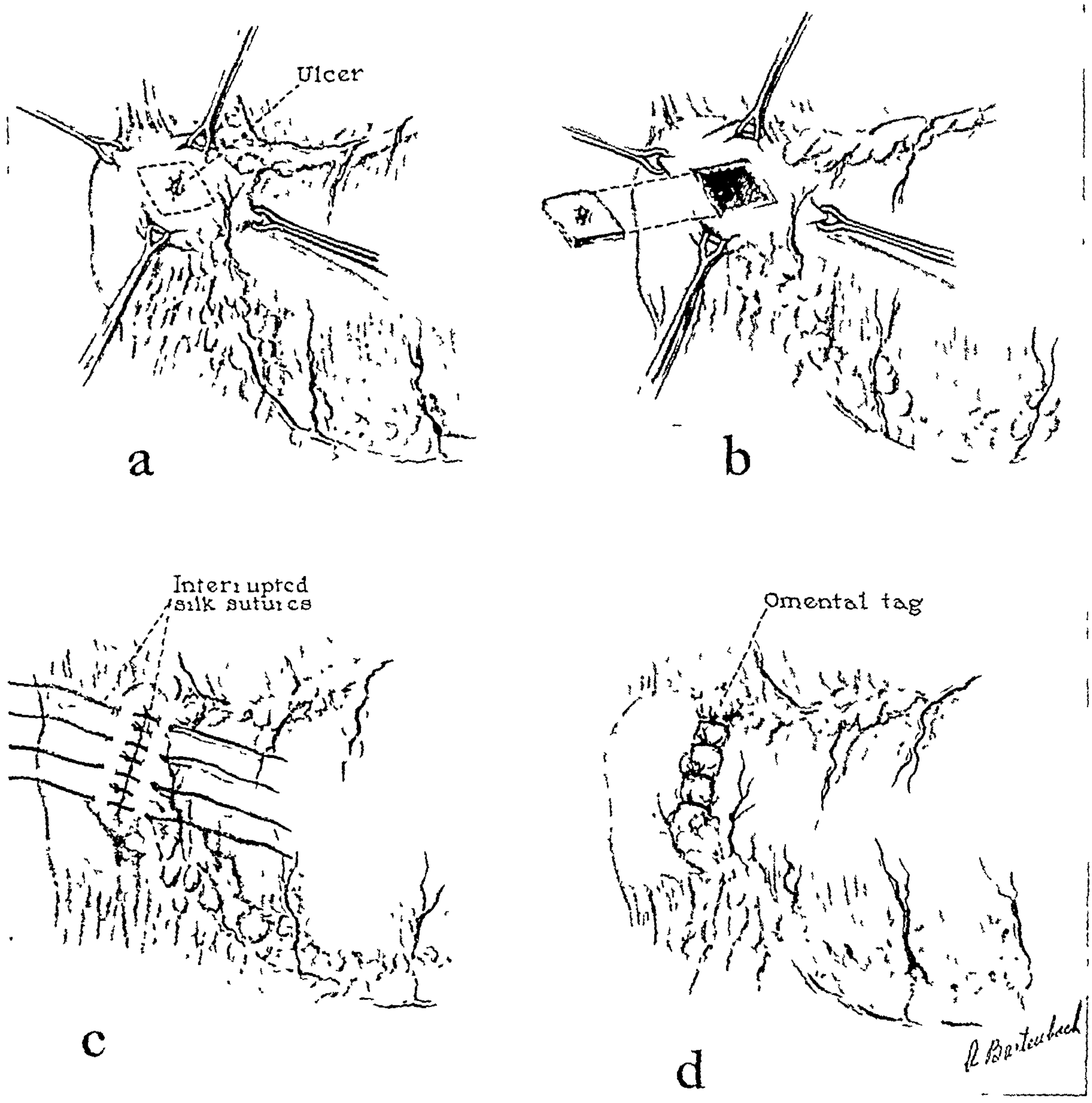

Figure 6. Steps [illegible] closure of perforated peptic ulcer. a. Ulcer exposed. b. Local excision of diamond shaped [illegible] closure of diamond shaped area. d. Omentum packed over suture line.

RESULTS

There has been a rather steady decrease in the mortality rate of surgically treated cases of perforated peptic ulcer, from the 68 per cent reported by Mikulicz in 1897 to the present rate, which ranges between 24 and 27 per cent. The total mortality rate for this series was 27 per cent.

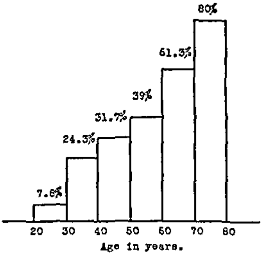

Figure 7 Mortality rate compared with patients' ages.

In establishing the mortality rate for operations on perforated peptic ulcers, it is only fair that the combined mortality of all types of operations be taken as an index of the gravity of this condition. If one were to be guided by a very low rate following radical procedures like partial gastric resection, one might conclude that this was the operation of choice for perforated peptic ulcers. This would be very misleading, because such radical procedures are reserved for the good risks and are not attempted on the poor risks.

While a correlation between the mortality rate and the type of operation performed cannot be accurately made, a close correspondence is found between the age of the patient and the number of deaths and between the time elapsed after perforation and the number of deaths. This may be clearly seen in figures 7 and 8.

A very interesting study of the peritoneal fluid from perforated ulcers was carried out by Dr. Davison[4] and his coworkers on a limited group of the cases that are being reported in this series. They aspirated material from the abdominal cavity immediately after the incision was made. This material was sent at once to the bacteriological laboratory where cultures were made. They did not make direct smears because they felt that the presence of alimentary debris would cause difficulty in the identification of organisms. Their cultures were taken from the peritoneal exudate occasioned by perforations of either the stomach or the duodenum. Their findings were in accord with those of other workers in the same field and revealed a fairly constant relationship between the time that elapsed after the perforation and the abundance of the bacterial flora. The cultures taken in the first six hours after perforation were usually sterile, but if they were positive, this suggested a poor prognosis. In those patients in whom cultures were sterile at the time of operation, it was reasonable to expect an uneventful postoperative course and a low mortality rate. The organisms most frequently found in our

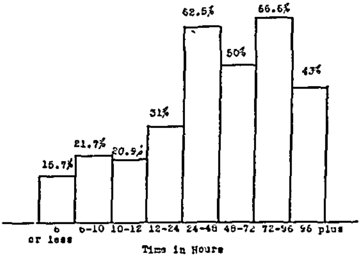

Figure 8 Mortality rate in relation to time interval between perforation and operation

series were the Bacillus coli communis and the streptococcus.

The consideration of a peritonitis of bacterial origin brings up the question of drainage in these patients. The concensus of opinion among the surgeons in our hospital is that drainage of the free peritoneal cavity is more of a gesture than an efficient therapy. Immediately after perforation, the peritoneal inflammatory reaction is the result of a chemical irritation. This ceases when the irritating contents are removed or diluted and the opening sutured. Obviously there can be little indication for drains in these cases. In those patients who are already in the throes of a spreading peritonitis it would seem that drainage could offer little in the way of control. When there is a tendency to localization of the peritonitis, the developing abscesses do not become well defined or demonstrable until near the third week following perforation. I am of the opinion that few would subscribe to the practice of keeping drains in the free peritoneal cavity three weeks. The work of some of our colleagues strongly confirms the general impression among us that the free peritoneal cavity cannot be adequately drained by any method.

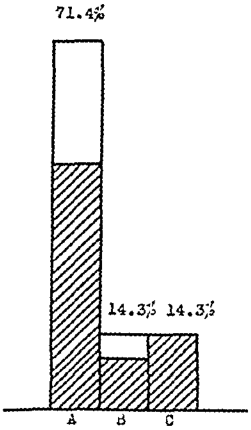

Figure 9. Location of secondary intra-abdominal abscesses following repair of perforated peptic ulcer. A. Subphrenic. B. Pelvic. C. Perigastric. Shaded portion indicates mortality.

In our series 3 per cent of the cases developed secondary intra-abdominal abscesses. Seventy-one and four-tenths per cent of these were subphrenic. The location of the abscesses and the mortality rate in each type is shown in figure 9.

The chart in figure 10 shows the incidence of wound infection. It will be noted that among those developing a wound infection there was a mortality rate of only 17.3 per cent, while among those without a wound infection 35.9 per cent died. This is a good example of how figures alone can be very misleading. The facts are that many of the most serious cases did not live long enough for the wound to become infected.

Figure 11 shows the relationship between evisceration and wound infection. In the nine cases which eviscerated there was a mortality of 44.4 per cent. Obviously this is a very serious complication.

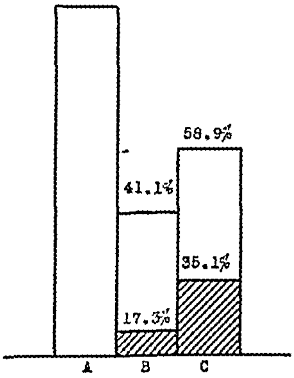

Figure 10. Incidence of postoperative wound infections, showing mortality rates. A. Total cases. B. Wound infections. C. No wound infections. Shaded portion indicates mortality.

The late Dr. Jackson[7] suggested a simple procedure for lessening wound infection and evisceration in cases of perforated ulcer. The usual toilet of the peritoneum should be carried out and the incision in the peritoneum sutured. The wound superficial to the peritoneum is then washed thoroughly with soapy water and rinsed with sterile water or salt solution and closed with interrupted sutures We have employed this procedure on our recent cases and feel that it has decreased the number of wound infections which commonly follow this type of operation Hartzell and Sorock[5] have advocated a short transverse incision in the right rectus area to avoid the danger of wound disruption and evisceration

The most common cause of death following perforation of a peptic ulcer is diffuse spreading peritonitis In our series it was the cause of 70 6 per cent of the fatalities Pulmonary complications, including atelectasis, bronchopneumonia and lobar pneumonia, accounted for 11 per cent of the postoperative deaths A detailed review of the causes of death in this series would not be particularly illuminating, because in many instances several factors contributed to the fatal outcome

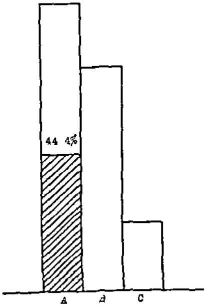

Figure 11 Incidence of evisceration in relationship to infected and clean cases A Total eviscerated cases (Shaded portion shows mortality) B Infected cases which eviscerated C Clean cases which eviscerated

Postoperative care is of the utmost importance in these cases Because of the extreme emergency, there has been no time for adequate preoperative preparation The postoperative management should be directed toward (1) keeping the stomach empty, (2) providing an adequate fluid intake, (3) rehabilitating the patient in order that he may combat the complications which arise

SUMMARY

1 Seven hundred cases of perforated peptic ulcer operated on at Cook County Hospital from 1925 to 1938 have been reviewed

2 The largest percentage of perforations occurred in patients between the ages of 20 and 50 years

3 Forty six and eight tenths per cent of the perforations took place within three hours after a meal, but the physical activity of the patient seemed to have no causative effect on the perforation of his ulcer

4 Most of the patients in this series presented "classical" symptomatic pictures with the occurrence of perforation

5 The diagnosis of perforated peptic ulcer can very frequently be definitely substantiated by fluoroscopic examination showing a pneumoperitoneum

6 In cases of perforated peptic ulcer, *operation should be carried out as soon* as the diagnosis is made

7 The simplest operation will probably give the best results

8 Washing out the wound with soapy water has been found to be an aid in reducing infections

9 The most common complications are peritonitis and pulmonary infections

10 Postoperative care of these patients is of extreme importance

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SUMARIO

Perforación en Ulcera Peptica

1.—700 casos de úlceras pepticas perforadas en el Cook County Hospital desde 1925 a 1938 han sido revisados.

2.—El porcentage de perforaciones ocurren en enfermos entre las edades de 20 a 50 años.

3.—Cuarenta y seis y ocho decimas por ciento de perforaciones tuvieron lugar dentro de tres horas despues de una comida, pero la actividad física del enfermo parece no haber tenido efecto causativo en la perforación de la úlcera.

4.—El mayor número de los enfermos en esta serie presentaron cuadro sintomático "clásico" con la ocurrencia de la perforación.

5.—El diagnostico de la úlcera peptica perforada puede muy frecuentemente ser substaciada por examen fluoroscópico mostrando un pneumoperitoneum.

6.—En casos de úlcera peptica perforada, operación debe de hacerse tan pronto como el diagnostico sea hecho.

7.—La operación mas simple probablemente de los mejores resultados.

8.—El lavado de las heridas con agua y jabon se encuentra que ayuda a la reducción de infecciones.

9.—Las complicaciones mas comunes son peritonitis y infecciones pulmonares.

10.—Cuidado postoperativo de estos enfermos es de una importancia extrema.

RÉSUMÉ

1. Analyse de 700 cas d'ulcères peptiques perforés opérés à l'Hôpital Cook County pendant la période de 1925 à 1938.

2. Le plus grand nombre de ces perforations survinrent entre les âges de 20 à 50 ans.

3. 46.8% de ces perforations eurent lieu dans les trois heures suivant un repas mais l'activité physique du malade ne paraît pas avoir eu aucune influence causative sur la perforation.

4. La plupart de ces malades présentèrant les symptômes "classiques" qui accompagnent ces perforations.

5. Très souvent, on peut confirmer le diagnostic par un examen fluoroscopique déccelant un pneumoperitoine.

6. L'opération doit être précoce, doit être immédiate.

7. Les opérations les plus simples donnent les meilleurs résultats.

8. Le lavement de la plaie avec de l'eau savonneuse aide à réduire l'infection.

9. Les infections pulmonaires et la peritonile sont les complications les plus fréquentes.

10. Le traitement post-opératoire est d'une importance capitale.

Refrigeration Anesthesia*

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CRACKED ice, snow ice, or ice water were used as the sole anesthetic for 43 amputations of lower extremities in the past six months, with a tourniquet to accurately control the area of anesthesia. No sedative medication was needed as an aid to the anesthesia and most of the patients were too sick and too weak to become emotionally upset at the thought of a major operation. The patient's mental state was thoroughly considered, and, if necessary, the indicated medication was given to allay apprehensiveness, fear, or an emotional state. Chrymotherapy has been used for the relief of pain, for the treatment of cancer, drug addiction, and mental disorders.[1]

The senior author[2] has conducted animal experiments for years, adding an important new feature, the use of a tourniquet with reduced temperatures to localize the effect of chilling. A rat's tail[3] became gangrenous within a few hours after ligating it and exposing it to *increased temperatures;* whereas another tail, ligated and continuously refrigerated, remained viable after 54 hours. What takes place in the tail distal to the tourniquet? When refrigerated, the cell metabolism is reduced to the minimum, to an even greater degree than is present in the individual cells of the hibernating animal.

The animal accommodates himself to the temperature of his environment[4] and even when exposed to a temperature far below freezing, there is no permanent structural change, the blood vessels are not damaged and the blood remains a circulating medium.

At the New York City Hospital each surgical staff is on General Duty for a part of the year but each staff has a Special Assignment for the entire year, both in the Hospital and in the Dispensary. Our assignment has been the Study of Peripheral-Vascular Diseases. This report represents the combined experience of all the members of the team, both in and out of the Hospital during the past six months and is limited to amputations for gangrene, diabetic and/or arteriosclerotic, in unselected cases. Statistical reports will be published elsewhere.[5]

The general belief that no tourniquet should be applied to a diabetic or arteriosclerotic extremity does not hold when the leg is refrigerated.

Our patients represent the group found in any active municipal hospital of the largest cities; senile, emaciated, dirty, with the usual diseases of these unfortunate people; forlorn, discouraged, mostly unemployed, often friendless and sometimes with no incentive to live.

The actual cause of the gangrene may be of lesser importance than the rest of the pathology and it is of paramount importance to see that the patient is in his best possible condition before operating. Rarely it is urgent to amputate at once to relieve the patient of his infection and improve the general condition afterward. A good rule to follow is never to neglect the patient as a whole to treat only the local condition. Too often patients are held in the medical wards, not only when there is no improvement, but when there is actually a progression of the gangrene. There are fewer errors made by anticipatory operations than by the procrastination of the metabolic service.

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*Presented at the International Assembly of the International College of Surgeons, Mexico, D.F., August, 1941.

Of the series of 43 amputations there were 5 deaths in the first 13, a mortality of 40% but 4 of these patients died of conditions not directly associated with the operation or anesthesia. These we term institutional, not post-operative, deaths. The other 1 was due partly to our inexperience. The general condition was poor and a low amputation of the leg was performed as a palliative procedure for an infected foot; but the infection soon involved the stump and the part was refrigerated, without a tourniquet, in the hope that the infection could be controlled enough to amputate in the thigh. The patient died in his sleep, the night before the scheduled operation. 1 death occurred in the next 30 cases, a mortality of 3⅓%. 6 deaths in the entire series makes a grand total of 14% mortality. We might try to offer an excuse for the 1 death in 30 operations because the patient refused our advice until he was septic and in great pain. Comparing this series with previous experiences, and appreciating that these cases were unselected, the result is an improvement. The ages ranged from 49 to 88.

In the routine preparation of the patients, every indicated test is made to evaluate the true physical state and surgery is undertaken only when there is better than an outside chance for improvement. Further experience with this procedure will be invaluable.

DETAILED TECHNIQUE

When the site for the saw line is determined the part where the tourniquet is to be placed is surrounded by ice bags.

1. The extremity resting on a rubber sheeting showing the 3 levels the proximal, representing the tourniquet site, the middle, the saw line level and the distal, the proposed stump end. Ice bags surround the tourniquet level as a means of numbing the structures before the tourniquet is applied.

This should be far enough away from the operative field to allow the surgeon freedom of motion: usually two or three inches. The ice bags chill the part sufficiently so that the tourniquet may be applied with the *minimum of discomfort* to the patient. The application of the tourniquet is the most important part of the technique. A gum rubber tubing, ½″ wide, encircles the extremity, tight enough to cut off all circulation placing a double thickness but only a single width. There must be no folding of the skin, such as a pinching. The clamp fixes the tube in such a way that the instrument does not come in contact with the skin. Refrigeration is begun immediately.

If the operation is to be below the knee and the patient is strong enough to sit on the side of the bed or up in a chair, the foot and leg are placed in a pail of ice and water in such a way that the ice water is 2 inches proximal to the tourniquet. An hour and a half to two hours is sufficient for a complete anesthesia. A test for anesthesia can be made by inserting a needle into the largest nerves: If the desired anesthesia has been obtained no sensation is felt by the patient.

If the amputation is to be above the knee, we cannot use the pail of ice water.

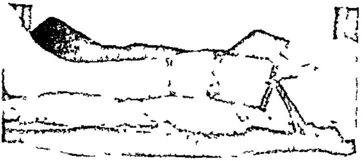
2. *When patient is able to sit up in a wheel chair the foot and leg are placed in a tall pail of icy water, immediately after the tourniquet is applied. The pail may be bandaged to the foot piece of the chair and the patient continues Refrigeration until he is placed on the operating table.*

The site of the saw line is determined, the tourniquet is applied above and the extremity packed in cracked ice or snow ice from 2 inches proximal to the tourniquet. Rubber sheeting is placed to protect the bed and to envelop the part which is encased in ice In order to allow the water to drain a pail is placed at the foot of the bed. The extremity must be constantly chilled and ice must be added as required. The temperature of ice water and of the skin packed in ice is about 5 degrees Centigrade. The best time of exposure for the average thigh operation has been found to be two hours and a half. In an old arteriosclerotic, with an extreme emaciation, the time of refrigeration will be shorter than with a husky young fellow who requires an amputation in the mid-thigh as a result of a railroad accident.

When the anesthesia is complete the patient is moved in his container of ice, to the operating room where the entire surgical team awaits him. There must be no waste of valuable time after the patient is ready.

After all means of refrigeration have been removed the patient is moved to the operating table. The skin is quickly and gently dried and the entire field, including and above the tourniquet, is painted with iodine or tincture of zephiran. The involved foot is covered and wrapped in towels preparatory to the draping of the field. Particular care must be taken that the unsterile tourniquet is proximal to the exposed operative field as it will not be taken off until the operation is almost over.

The surgeon selects the type of amputation. It is not required that the skin flaps hug the ligated area. Most of these cases reported were a modified Guillotine. If the saw line is to be the lower third of the thigh, a Guillotine immediately below the patella does well, the leg may be quickly disarticulated through the knee joint and the involved, infected, malodorous part taken out of the room. It is then much easier to complete the procedure working from below, instead of reaching and leaning over the table to see what you are doing on the side opposite from which you are standing.



3. *Shows the ligated extremity resting on a layer of cracked ice*

The patella is dissected out, posteriorly, preserving the bursae. The femur is freed to the proposed saw line, the periostium prepared as desired. All muscles having their origin from the lower posterior fourth of the femur are left undisturbed as they will be excised en masse when the lower end of the bone is removed. Leave as little of the muscle bellies in the distal end of the stump as possible, since muscle bellies are apt to slough unless the blood supply is good. Usually only the semimembranosus has enough muscle tissue to require fashioning. Fashion the bone, ligate all vessels recognizable, pull down the sciatic nerve and section it high after injecting with alcohol. The bone is to be sawed at a right angle to the line of the extremity, not at a right angle to the bone itself. If one wishes to shorten the tendons, now is the time to do it, ligating first to avoid bleeding from the tendon stump. After being satisfied that all the main vessels have been ligated, have someone remove the tourniquet. Free bleeding takes place from the small vessels and these must be ligated. Close stump end by meticulously approximating the fascia but place no sutures in the tendons.

The accurate coaptation of the fascia, which was not dissected from the tendons, properly places the tendon ends. Suture the skin and superficial fascia. Use silk technique throughout for blood vessels, fascia and skin. No drain is used unless one is certain of a break in the correct technique or incomplete hemostasis or a known infection.

Can the tourniquet be applied too tightly? No case in this series has shown such a complication. It is known from animal experiments that a tourniquet applied too tightly results in ulcer, paralysis and thrombosis; similar complications might reasonably be expected in patients, except that the margin of safety is wide for the short time the part is constricted. Unusually careful application of the tourniquet is the best insurance against such grave complications.

At the conclusion of the operation the lightest of dressings is applied and the stump is placed in a plaster of paris gutter splint with an ice bag at the end and one on either side, making sure there is no pressure. The ice bags are held in place two, three or more days, depending upon the conditions of the flaps. The postoperative refrigeration limits the edema and keeps the part free of pain. Actually within a few minutes after the application of the tourniquet through the entire preoperative, operative and postoperative stages there is no discomfort. There is no indication for sedation.

No tissue is frozen. Not even the skin is firm as it is when ethyl chloride is sprayed on it; the blood is fluid. When the tourniquet is removed oozing shows the location of blood vessels which might be too small to recognize otherwise. The temperature in the depth of the tissues is not known as we have no instrument such as a thermo-couple.

We do not know the pressure necessary to shut off the circulation but a manufacturer making sphygmometers has been requested to make an apparatus for this purpose with the constricting ban no wider than the gum rubber tube, which is ½″.

Healing is slower than with other methods and depends directly on the length of time reduced temperatures were used. Sutures are removed on the 10th to 12th day. If a hematoma develops, prompt drainage is established and the part is kept at a temperature of 15 degrees Centigrade a little longer. If there is a marked arteriosclerosis the part is allowed to return to a normal temperature more slowly than with a better circulation.

What are the benefits to be derived from refrigeration anesthesia? Lives are saved. There is no evidence of shock during the period of reduced temperature before, during, and after the operation. The pulse and blood pressure are not disturbed. If the surgical technique was faulty, allowing postoperative bleeding from incomplete hemostasis, or pieces of tissue that might slough allowed to remain, there may be a degree of delayed shock. That would be the fault of the operator, not the anesthetic method. There can be no growth of organisms at a temperature of 5 to 15 degrees Centigrade. There is no reason for haste. The anesthesia lasts an hour or more if the room is not warm but if there is an increased temperature, there may be a pricking sensation when the needles are used to suture the skin. In hot weather this possibility should be anticipated by placing ice bags about the extremity well above the tourniquet just before the operation.

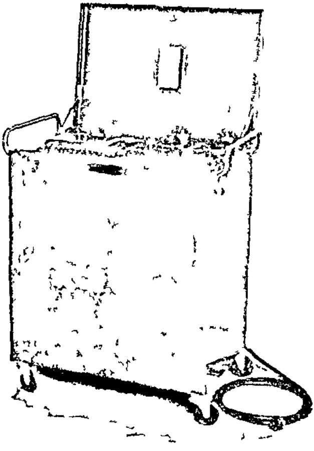
Our pathologist, Dr. James Lisa, reports that a study of all the legs removed shows there is no microscopic change in any of the tissues as a result of the refrigeration or the ligation, especial attention being paid to the condition of the blood vessels.

What other indications are there for this method of anesthesia beside the removal of gangrenous parts?

1. In industrial and railroad accidents and for the control or prevention of infection.

2. In active warfare. A man may have his leg shot to pieces demanding removal at the earliest possible moment. If ice is available, the part could be packed immediately, and the tourniquet applied, controlling all hemorrhage, relieving him of all pain, and ending the underlying causes of shock. Any trailer, mobile unit has enough electricity to manufacture ice: 2 or 3 pailfuls will suffice.

If no ice is obtainable, the first army surgeon to examine the soldier could determine the probable site of amputation, then place a tourniquet immediately distal to the end of the proposed stump and send him on his way. The patient would be relieved and could be transported for hours, if necessary. This tourniquet should not be removed if in place for many hours as the toxins developed at body temperature below this line might be sufficient to kill the host when absorbed When the man reaches the hospital a second tourniquet would be applied as previously described and the entire extremity packed in ice for the time necessary for complete surgical anesthesia. The original tourniquet will shut off the lymph circulation as well as the blood and if the gas and or tetanus



4 The portable electric refrigerator which is thermostatically controlled Used instead of cracked ice

Epidemias De Guerra*

(War Epidemics)

CONRADO ZUCKERMANN y MIGUEL E. BUSTAMANTE
REPRESENTANTES DEL
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SUMMARY

The authors stress the importance of the rôle played by epidemics in warfare. Hygienic measures and a knowledge of the problems involved are of paramount importance in avoiding this most important etiologic factor. They conclude that more deaths are caused by epidemics than by wounds. The remedy: hygienic measures.

LA situación en que se encuentran todas las naciones durante época de guerra, como la presente, tiene caracteres—especiales desde el punto de vista sanitario, que afectan tanto a los países beligerantes como a los no beligerantes, y entre las modificaciones más intensas se cuentan las de la salud de los habitantes durante el conflicto armado y después de él.

El Departamento de Salubridad Pública de México tiene especial interés en conocer las valiosas opiniones de los concurrentes a este Congreso, porque su programa es esencialmente de prevención y las enseñanzas y experiencias que aquí se traigan servirán para la protección de nuestro pueblo contra la enfermedad.

Aun cuando estamos en paz y deseamos conservarla, no estamos exentos de vernos afectados por las condiciones que impone la guerra y por enfermedades transmisibles que, como es bien sabido, se exacerban en dicho tiempo y producen brotes epidémicos y epidemias

Además, si se toman en cuenta los cambios tan marcados que produce el estado de guerra en la vida humana, se comprenderá que tanto los padecimientos transmisibles como los no transmisibles se incrementan en número de casos y en su gravedad en tales épocas.

Las estadísticas acusan claramente que el aumento no solamente corresponde al tiempo de guerra, sino que es notable la intensidad morbígena en los meses y años de la postguerra, y que abarca al mismo tiempo al ejército y a la población civil.

Históricamente la mortalidad por epidemias fué mucho mayor que la debida á las armas hasta el siglo XIX; entonces se calculó que por cada ocho soldados que morían por enfermedades infecciosas fallecía uno en combate.

En la guerra de 1914 a 1918, la proporción fué de 2 a 1, es decir, por cada dos fallecimientos por enfermedades transmisibles, hubo una muerte por heridas de guerra.

La población civil sufre tanto, que sin insistir en el aspecto militar que personas capacitadas tratarán y que a nosotros no corresponde, es notoria la gran cantidad de muertes que en ella causan las epidemias en época bélica.

La de gripe que siguió a la conflagración mundial anterior, produjo veinte millones de muertos en su pandemia, de los cuales quince millones de defunciones correspondieron al Asia, dos millones a Europa y un millón, respectivamente, a los continentes de América, Africa y Oceanía; en cambio se calcula que en la guerra murieron diez millones de combatientes.

Nuestro trabajo fundamentalmente se refiere a la población civil de una nación no beligerante y está dividido en dos partes, la primera se refiere al conocimiento de las enfermedades transmisibles que aumentan en epoca de guerra y la segunda a las medidas de prevención que deben adoptarse.

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*Presented at the International Assembly of the International College of Surgeons, Mexico, D.F., August, 1941

El orden en que revisaremos brevemente las influencias patológicas sobre la población, es el natural en la presentación de los padecimientos en las epocas de guerra.

Probablemente los primeros y casi inadvertidos perjuicios son los causados por las deficiencias de alimentación. La carestía de los artículos de primera necesidad y la escasez de muchos de ellos aparecen tempranamente y continúan agravándose hasta mucho tiempo después de que finaliza la tragedia en los campos de batalla. Como resultado se prepara el terreno para el desarrollo de las enfermedades y su mayor gravedad.

Si la nutrición ya es defectuosa de ordinario y se necesita que sea intensa la educación higiénica acerca de cuales son los mejores alimentos, su preparación y su consumo, en tiempos de anormalidad es esencial la campaña en favor de la alimentación correcta.

Toca a los médicos y a las oficinas de salubridad, insistir en la importancia de los nuevos conocimientos sobre nutrición. Basado en ello podra dar ayuda efectiva a las familias para que gasten bien el dinero destinado a los alimentos. En Mexico, donde el consumo de maíz y frijol es el basico, no subirá el costo si se logra que las verduras se cultiven abundantemente en las propias casas, como se cuidan las flores, si el dinero para dulces y condimentos se destina a frutas y se despierta el interés en la cría de aves de corral, para que sus productos se añadan a la ración diaria.

La enseñanza de procedimientos de cocción de las verduras de tal manera que se utilicen todos los minerales, es otra forma de mejorar luego la alimentación.

En conexión con esto es urgente la cooperación de varias instituciones oficiales para difundir buenos métodos agrícolas y la reglamentación de los precios de alimentos indispensables para la vida sana.

Por otra parte, los problemas de ciertos alimentos, como la leche, unen lo referente a sus cualidades para la nutrición, con su importancia como factores de brotes epidémicos de enfermedades transmisibles.

Los problemas de saneamiento de la leche, carne, agua y en general los del medio, se agudizan en tiempos de guerra, por los translados de grupos humanos, las aglomeraciones y la promiscuidad resultantes. En estos últimos años no ha habido nación que no haya pedido a sus instituciones sanitarias intervención rápida para el arreglo de casas, campamentos y refugios, a fin de evitar que se produzcan epidemias, que podemos llamar con justicia, de guerra, puesto que a ella se deben y son completamente anormales en la vida social.

La fiebre tifoidea y las disenterías, el tifo y la fiebre recurrente, la peste y el paludismo esperan las condiciones que favorezcan su paso al tipo epidémico. La viruela, el sarampión y la escarlatina también amenazan a los pueblos como resultado de la guerra. La reunión de grupos de jóvenes para adiestramiento militar conduce al aumento de la tuberculosis y los orejones, la meningitis cerebro espinal y, sobre todo las enfermedades venéreas hacen su aparición.

Las neumonías y la terrible influenza han causado grandes destrozos en las guerras y quedan como causas importantes de muerte durante muchos años.

Las enfermedades que hemos citado como productores de epidemias de guerra no son males nuevos ni desconocidos, desgraciadamente son compañeras diarias de la vida nacional, pero eso indica precisamente la importancia de su prevención y dominio.

En algunos países donde ya casi no tienen fiebre tifoidea, donde casi desconocen la difteria y donde se ha nulificado el tifo ocurren en las guerras aumentos de importancia, no entre los ejércitos cuyos elementos están inmunizados o poseen medios de prevención, sino en los no combatientes. En otros con menos recursos higiénicos las epidemias son una amenaza gravísima y deben tomarse las medidas necesarias para evitarlas.

Los recursos de la higiene y de la medicina preventiva son conocidos y solo se requiere sistematizar su aplicación, pero tal cosa no puede lograrse sin el conocimiento previo de cuáles son las amenazas.

Debe recordarse lo referente a las enfermedades mentales, verdadera carga de la vida moderna que impone grandes problemas a los seres humanos y que se [illegible] circunstancias de anormali[illegible]

Los médicos tenemos, pues, en las circunstancias que nos ocupan, un papel de trascendencia. La solidaridad y cooperación entre los grupos que velan por la salud de los civiles y de los militares, es un primer paso hacia el programa de prevención de los padecimientos físicos y mentales, hacia el fortalecimiento de los seres humanos mediante una buena alimentación, el desarrollo de su resistencia por los recursos de inmunización y su defensa por medidas de higiene personal y saneamiento del medio.

Además, para la prevención son importantes el catastro de hospitales y de sus recursos; el censo de médicos, enfermeras, etc., y el conocimiento de los medicamentos con que se pueda contar para la asistencia médica.

A pesar de lo breve como es este resumen y de la falta de experiencia nacional respecto a las epidemias de guerra, que pudiera servirnos de guía y orientación, podemos considerar que el sacudimiento social destructor debe ser tomado en cuenta en nuestro País como factor de alteración de las condiciones sanitarias.

La prevención de las epidemias se obtiene por educación general sobre los recursos actuales de la medicina preventiva, por el empleo de los medios sanitarios para la inmunización en gran escala; por el correcto aprovisionamiento de agua, de alimentos, su consumo adecuado, y por la asistencia médica oportuna de quienes enfermen.

Es posible evitar las epidemias de guerra y, más todavía, es posible lograr en forma real que al llegar la paz, se encuentren, en los pueblos que sepan prepararse, individuos vigorosos que se dediquen a la reconstruccíon.

RESUMEN

Los AA. dicen la importancia higienica de las condiciones de guerra apoyandose en el hecho que mas mueren de epidemias que de heridas i recalcan la importancia de una organización sanitaria.

RÉSUMÉ

Les AA. disent l'importance higienique des conditions de guerre notant le fait que plis de decés sont causés par les épidemies que par les blessures et soulignent l'importance d'une organisation sanitaire eficace.

PROPOSED AMENDMENT TO THE CONSTITUTION AND BY-LAWS UNITED STATES CHAPTER—INTERNATIONAL COLLEGE OF SURGEONS

It is proposed to eliminate Article 4 of the present constitution and by-laws on Page 19, and substitute therefor the following *Article 4.*

REGENTS. Shall be those selected by the Executive Council to direct the scientific activities of the United States Chapter.

1. *NATIONAL REGENTS,* one for each Specialty, shall be those who have been appointed national heads of their respective Specialty in the United States of America. Their selection shall be dictated solely by merit and distinction. They shall be appointed for a term of two years by the Executive Council. They are eligible for re-appointment.

The National Regents shall serve on the Board of Governors.

2. *STATE REGENTS,* one from each state, shall be those who are representative of the best thought and traditions of surgery in their own state. They shall be appointed by the Executive Council for a term of two years. They are eligible for re-appointment.

The State Regents shall be heads of the units in their respective states and shall maintain the standards, integrate the activities and promote the general welfare of the Chapter in the territory under their jurisdiction. They shall be consulted in the investigation and examination of applicants from their state. They shall also serve on the Board of Governors.

Objectives in Surgery of the Biliary Tract*

FRED M DOUGLASS, M D, F A C S, F I C S
TOLEDO, OHIO

SURGERY is constantly setting a higher goal for itself Not so long ago it was considered almost enough to prevent death, abolish pain, and minimize disability Today these are only the starting considerations Beyond them we seek to establish the conditions that make it possible for our patients to lead normal lives

More and more today, surgery aims at nothing less than health itself This is the ultimate goal Beyond it we cannot go

Surgeons are kept so busy applying current knowledge and seeking new knowledge that they do not always stop to evaluate the reasons why their work is constantly improving

Someone has said that whenever we hitch our wagon to a star, we must expect to be pulled up Surgery has hitched its wagon so firmly to the star of functional health, that we are all being pulled up to new levels of achievement

We must note that in the affairs of the human body, the surgeon tends more and more to pass from the role of arbitration to the role of conciliation Our work does not stop with the elimination of a disturbing factor We go on to the much more delicate task of preserving or creating the harmonious balance that we call health

It is my privilege today to discuss some aspects of the problem of biliary disease in the light of the new concept

In other presentations on this subject, my associates and I have repeatedly testified to the growth of the new outlook in this particular field

Since 1932[1] we have based all our work on the theory that a specific condition of biliary disease ought not be treated by itself We maintain that the outlook in any situation of biliary disease requires a consideration of all the related parts of the biliary system

In this view the gall bladder, the liver, the ducts and the pancreas are not separate parts, but a related system in which the fortunes of health and disease are shared to some degree The elimination of a disturbing factor is followed by a measure to compensate for lost functions, to protect the remaining parts against new pathology, and to make the most of every opportunity to banish infection from the whole biliary system

Our presentation today is based upon a review of 2549 cases of biliary tract disease over a period of more than 25 years It includes a group of 209 common duct obstruction cases, reviewed before the Ohio State Medical Association in 1939,[2] an additional group of 36 later cases reviewed before the Southeastern Surgical Congress[3] in March, 1941, and, finally, 47 new cases which have been added to our study files since January of this year

Every new group of cases since the 1939 presentation has been used to test the validity of our original conclusions, and we are more than ever convinced that adequate surgery in the biliary tract involves four major issues

As we see them, these issues in the order of their importance are as follows

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*Presented at the Third International Assembly of the International College of Surgeons held in Mexico City, August 1941

First: The removal of obstruction within the ducts.

Second: The treatment and management of infection within the biliary tract and its surroundings.

Third: The establishment of a free drainage of bile into the intestinal tract.

Fourth: Management to prevent a recurrence of the original disease.

It may well be that the first and second points are not separate issues, but parts of the same issue. For the sake of emphasis it can do no harm to give them separate listing.

All the issues named are implied by one broad concept which defines our policy and which we can state in the following terms:

Adequate surgery in biliary disease involves the management and correction of the pathology, with special attention to the consideration of residual infection within the liver. Long drainage of the common duct is the only approach to the problem of residual infection.

Glancing in a general way at our earlier reports on biliary surgery (covered in other publications), we may note the supplementary conclusions:

First, that a policy of early operation as a preventive of duct infections and stones and other obstructions is to be favored.

Second, that experience indicates a more general use of radiopaque solutions as a study medium prior to the removal of drains.

Third, that facts collected in such studies are indices to procedure and need to be examined most carefully.

All these are useful guides in reducing the morbidity rate and the ratio of cases presenting recurring symptoms.

On the use of radiopaque substances in biliary work, we refer interested colleagues to published material noting the observations of Cotte,[4] Mallet-Guy, Beaupere,[5] Overholt[6] and many others.

Our preference in choosing a radiopaque substance is brominol, a brominized olive oil, which we use in portions of 20 cubic centimeters 10 or 12 days after operation, allowing a gravity flow through the tube into the ducts under fluoroscopic control.

THE REMOVAL OF OBSTRUCTIONS

We begin by fitting the operation to the patient, not the patient to the operation.

Each case has its own peculiar quirks of pathology. The case history, personal examination, and the laboratory findings will suggest the type of operation to be used.

Then the patient himself is prepared for surgery. Fluids are given in generous portions by mouth and intravenously. The ill and jaundiced patient is given blood transfusions before surgery, and orders are left for other transfusions after the operation.

Observing Stewart's[8] testimony on the frequent reductions of the plasma prothrombin in obstructive jaundice and his comments on the stubborn prothrombin deficiency to be seen in severe liver damage and chronic sepsis, we give bile and vitamin K by mouth.

We take satisfaction in a low level of hemorrhage incidence. This is an effect obtained by conserving the bile and directing it back by rectal tube or nasal tube, and then by clamping the T-tube, thereby directing the bile flow into the intestinal tract.

We may note that two bleeding deaths occurred before this technique was employed. Since then, three bleeding cases have progressed to recovery.

The pathology will require an adequate exposure of the gall bladder and ducts. The surgeon must be watchful for abnormalities. The cystic ducts and arteries and the hepatic ducts and arteries vary in their relation to the common duct.

Where errors cannot be undone, it is best to avoid them, and we make no exception to the rule of verifying the identity of each duct and artery as it comes into view.

We have found it best to open a dilated common duct near the duodenum and establish its patency. The virtue of this method may be seen in the fact that we recovered stones or gravel from 41 of 51 ducts opened in spite of the fact that stones had not been palpable.

THE CARE OF INFECTION

Morbidity has been reduced in severe hepatitis through our policy of draining the common duct for a long period.

We take it as a fact gleaned from long observation that dilatation of the liver radicals is to be expected among patients with a long history. Conversely, we observe that the establishment of adequate drainage will lead to a gradual reduction of dilatation in the radicals.

Let us note: first, that a third of the patients in our series came to us with a 10 year history of symptoms.

Second, that reduced dilatation resulted from suitable drainage.

Third, that significant conclusions are to be drawn from a comparison of cures after common duct drainage and cures after cholecystectomy without drainage.

Finally, that chronic liver infection or an overlooked stone were the real cause of suffering among patients who had not received drainage and who were returned to us with symptoms described as "residual hepatitis," "chronic pancreatitis," and "spastic bowel."

ESTABLISHING THE FREE FLOW OF BILE INTO THE BOWEL

The guiding principle, never to be overlooked, is this: A permanent and rapid re-establishment of the bile flow into the bowel must be obtained.

It is decidedly important to establish the patency of the ampula of Vater.

The presence of gravel or thick bile in the duct is an indication for saline irrigations of the hepatic ducts and the common ducts.[9]

Small particles of gravel can be washed into the duodenum quite readily by administering glucose through the T-tube. The success of this, however, will depend upon a satisfactory closure of the duct around the tube.

Reference should be made here to the recent reports of D. MacDonald[10] on the cleansing of biliary ducts and the application of heat under thermostatic controls to the interior of the biliary tract.

MacDonald agrees that cholecystectomy does not remove all the pathological changes in biliary tract disease. He recommends effort in selected cases to produce a normal duct system.

Inflammatory conditions or injuries of course demand close attention.

Repairs can be made over a Douglass[2] modification of the McArthur drain for delivering bile into the duodenum.

T. E. Jones[11] has reported the use of a T-tube to simplfy common duct repairs.

As we see it, the time factor demands immediate anastomosis over a tube. In our opinion, a pause to locate the duodenal end of the common duct can be dispensed with. Our experience has been that small fibrous bands are all that remain.

At this point permit us to state our sovereign rule of procedure in a problem of inflammatory obstruction.

The rule is this:

Each case has some unique aspect and each case therefore must dictate the procedure. Preconceived rules ought not be entertained.

Only a short time ago, our group re-established the flow of bile by anastomosing the common duct to [illegible] over a tube. This procedure can be executed very rapidly. Given a mobile stomach, the suture line can be visualized readily and the anastomosis quickly completed.

The tube is extended into the duodenum. It will discard itself through the bowel after several weeks.

The principle of this procedure was recently published by Horsley,[12] who suggested bringing a tube through the abdominal wall near the operative incision instead of using a nasal tube. This was suggested to avoid annoyance to the patient and the possibility of postpharyngeal abscess.

A description of our technique is in order.

1. The stomach is opened above the pylorus and a small crile hemostat is passed through the stomach at the site chosen for anastomosis.
2. The tube is drawn through the stomach, bringing the end of the duct through the stomach wall approximately one-quarter of an inch.
3. The anastomosis is then completed using interrupted chromic #0 catgut suture.
4. The stomach is used only when the duodenum cannot be mobilized for anastomosis without tension.

PREVENTING RECURRENCE

The best approach that we have observed is a close study of the biliary tree, using radiopaque media. Using these media, we observe the rate of bile flow into the bowel, the degree of dilatation in the liver radicals, and the degree of the patient's comfort when the duct system is filled. Caution demands that the drain be kept in place until symptoms have been reduced to a minimum. When the symptoms have subsided, the tube can be clamped and the patient may be permitted to go about his work. Our patients have not objected to re-examination under the fluoroscope when we are collecting new data on symptoms.

Examining our statistics on 176 cases studied with opaque media, we note the following points:

Previous gall bladder surgery had been experienced by 47; cholecystostomy had been experienced by 18; cholecystectomy had been experienced by 15, and previous choledochotomy had been experienced by 14.

Stones were present in all but seven of the reoperative cases, and in every one of the seven we discovered common duct distortions caused by adhesions.

In the reoperative group, the removal of adhesions and drainage of the common duct quieted all the symptoms. No stones were recovered in the second operations. All members of this group have remained free of symptoms.

COMMENT

1. Residual infection as a primary consideration among patients with recurring symptoms has been indicated by comparative study.
2. Adequate drainage can be determined by comparisons of the biliary tree and the flow of bile into the bowel.
3. The surgeon can maintain a better control over the patient and the complications of biliary disease by a careful study of all the factors and by using vitamin K in association with the prothrombin estimations. Allowance must be made for the apparent fact that advancing liver damage limits prothrombin recovery.
4. The experience of 29 young persons suffering from acute gall bladder disease illustrates the consideration of prothrombin recovery. All these young patients were persons under 20. Their operations were performed before sub-

stantial liver damage had resulted from infection, and all have remained free of postoperative symptoms.

5. The other extreme of prothrombin recovery is illustrated by the group of patients whose symptoms from biliary infections range beyond a 10 year period. Residual complications are the rule in this group, almost without exception. Where dilatation of the ducts has not occurred or has occurred to a minor degree, patients have escaped postoperative symptoms. Old cases must have long drainage. A maximum end result cannot be realized without thorough drainage of the common duct.

6. When the ducts sustain accidental damage or display adhesions, measures to re-establish the bile flow into the bowel are imperative.

7. Radiopaque oil was used in the study of 145 females and 24 males—169 in all. The age range in this group was from 16 to 79 and the average age was 52.

8. Pain was the most constant symptom with 98 per cent occurrence rate. Nausea and vomiting were reported in 95 per cent of the cases and chills in 18 per cent. The time range of symptoms was from two months to 22 years and the average was 11 years.

9. The number of deaths was 12. Bronchopneumonia caused 4 deaths; cardiac conditions 3; hemorrhage 2; peritonitis 1; pulmonary embolus 1; and liver insufficiency 1.

10. A history of jaundice was established in 48 per cent of the cases. A positive culture was noted in the ducts of 10 per cent, 60 per cent had no growth, and statements were not obtained for 30 per cent.

11. There were 164 surviving cases. Of these, 6 experienced recurring symptoms and submitted to re-operation with the result that stones were recovered from the common duct. The accidental removal of tubes at a premature time prevented a study of the ducts in two other cases.

12. In the Anderson case, long drainage was ordered after an x-ray examination revealed a delay in the passage of dye into the duodenum. The tube was removed prematurely and symptoms persisted. The patient agreed to the replacement of the common duct drain within two months, and symptoms gradually decreased after three months of drainage. The tube was then clamped and after the patient had passed 10 comfortable days, was removed. Thereafter patient was free from symptoms.

13. The period of preparation can be shortened and the operative risk reduced by blood transfusions and the maintenance of water balance, bile salt administrations with vitamin K (cholic acid) as advocated by Coller and Maddock. The same procedure is to be continued during the postoperative period until the liver function is restored.

CONCLUSIONS

1. A total of 292 cases of common duct obstruction has been reviewed.

2. Study of the biliary tree was facilitated in 176 cases by the use of radiopaque dye.

3. Satisfactory drainage must be provided when an infection of the liver and the ducts is recognized.

4. The presence of an overlooked stone or an inflammatory obstruction can be determined without delay if radiopaque media are used in the early stages of the postoperative period.

5. No indications against the use of radiopaque oil have been observed.

6. More cures in biliary disease can be obtained by a policy of early operation.

7. A new procedure of common duct anastomosis to the stomach has been presented.

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SUMARIO

1. Se estudian 292 oclusiones del colédoco.
2. En 176 pacientes, el empleo de un colorante roentgenoopaco facilitó el estudio de las vías biliares.
3. Cuando se reconoce la infección del hígado y de los conductos biliares, es preciso efectuar el desagüe eficaz de éstos.
4. Valiéndose de alguna substancia roentgenoopaca desde los comienzos del período postoperatorio, se puede descubrir algún cálculo o alguna obstrucción inflamatoria que se haya pasado inadvertida.
5. No se sabe de ninguna contraindicación del aceite roentgenoopaco.
6. Se logra mayor número de curaciones de las enfermedades de las vías biliares, si se ejecuta en tiempo oportuno la operación quirúrgica.
7. Un procedimiento neuvo de la anastomosis del conducto comun al estómago ha sido presentado.

RÉSUMÉ

1. Une revue de 292 cas d'obstruction du cholédoque.
2. L'étude de l'arbre biliaire et de ses ramifications fut facilitée dans 176 cas par l'emploi de colorants radio-opaques.
3. Il importe de pourvoir un drainage satisfaisant du foie et des conduits biliares dans tous les cas ou l'infection de ces organes est reconnue.
4. La présence d'un calcul méconnu vu d'une obstruction inflammatoire peut être déterminee sans retard par l'emploi précoce des agents radio-opaques durant la période post-operatoire.
5. Il n'y a aucune contre-indication pour l'emploi d'huile radio-opaque.
6. Les opérations précoces donne le plus grand nombre de guérisons.
7. L'auteur présente un nouveau procédé pour effectuer l'anastomose du cholédoque à l'estomac.

RESERVATIONS FOR DENVER MEETING

In view of the great demand for reservations for the Denver Assembly, July 15-July 18, please make your reservations *promptly*. *Address* Dr. Dean W. Hodges, Republic Building, Denver, Colorado.

Colostomia Izquierda Definitiva*

TÉCNICA DE CUNEO MODIFICADA

(Permanent Efficient Continence in Left Iliac Colostomy)

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SUMMARY

The *treatment of a great number* of patients affected by rectal stenosis resulting from lymphogranuloma venereum on whom left iliac colostomy has been performed has afforded the author an opportunity of modifying some of the steps in operative technic with the principal aim of securing efficient continence.

For all patients on whom a colostomy has been performed and who wish to lead a socially active life, the aim should be to secure true continence, not mere regularity of movement. To achieve this, many procedures have been followed: a dietetic regime, use of a receptacle, obturators, modification of the lumen, insertion of the intestinal loop through a muscle, and the implantation of the afferent loop through a subcutaneous tunnel (method of Frank). These procedures are illustrated and reviewed by the author.

The author describes his so-called "mechanical sphincter" which achieves continence by compression of the external intestinal loop by means of this compression device. The author describes the modification of the Cunéo technic which he and Corachan developed.

The operative stages of left iliac colostomy and the postoperative care of the mechanically rendered continent anus "mechanical sphincter" are described and illustrated.

There are case histories on 26 patients, as well as a discussion of criticisms of this method.

EL GRAN número de enfermos, afectados de lesiones rectales, víctimas del virus poradénico, que acuden a nuestros servicios quirúrgicos, nos ha hecho que con frecuencia recurramos a la ejecución de la colostomía definitiva, la que por los resultados obtenidos durante cuatro años de experiencia *sobre dicha enfermedad*, y *las conclusiones* logradas por otros colegas que han trabajado sobre este asunto, es hoy en día, tratándose de casos avanzados de la afección, el método que en algunos pacientes puede mejorar su estado general, y en otros, proporcionarles una curación segura. (37, 38, 39, 40, 50.)

La formación del ano ilíaco definitivo, desde hace mucho tiempo se considera con temible horror, de tal manera que al indicárseles a los enfermos la intervención de su caso, son muchos los que piensan y calculan que esta medida los convertiría en seres inútiles para llevar su vida social, por lo que algunos prefieren continuar con la enfermedad o esperar la muerte, antes que someterse a la intervención

El fin de este procedimiento quirúrgico ha despertado entre los cirujanos, el propósito de perfeccionar las técnicas de las colostomías, de tal suerte que, en el momento actual de los *adelantos*, se *hace necesario realizarlas*, en espera de nuevas conquistas científicas sobre

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*Presented at the International Assembly of the International College of Surgeons, Mexico, D.F., August, 1941.

la dicha dolencia, y poder asegurar a los enfermos la reconstrucción de un ano, que fisiologicamente sea lo menos. feo, lo mas pequeño, que permita la contención de las materias y de los gases, en todo momento.

Las técnicas de Kurtzahn, Kischner, Haecker y Cuneo han procurado las citadas ventajas, por cuyas causas nos consideramos entre los aficionados para divulgar tales procedimientos, pues con ellos creemos que se obtiene, al menos en parte, mitigar los trastornos que ocasiona la colostomía en la vida interna y social del individuo colostomisado.

Hemos venido practicando colostomías desde hace cinco años. En un comienzo hicimos el clásico ano con puente cutáneo, *con la técnica de Madyl, el ano umbilical*, etc., pero luego que conocimos la técnica de Cuneo, nos dimos cuenta de sus ventajas y luego de cuatro años de experiencia sobre esta técnica, la que ha sufrido las modificaciones que exponemos en este trabajo, podemos decir, por los datos estadísticos que se insertan mas adelante, que la colostomía, según la técnica de Cuneo modificada, es la que reune mayores ventajas, en comparación de otras técnicas conocidas para el tratamiento de la rectitis infiltrativa a virus poradénico.

ANO ILIACO DEFINITIVO CONTINENTE

En el ano ilíaco definitivo toda la masa de heces fecales debe vaciarse forzosamente por el orificio artificial, estableciendo así una diferencia funcional con el ano temporal o fístula estercorácea que solo sirve de válvula de desahogo, de modo que las materias fecales o el contenido intestinal penetren en el segmento aboral del intestino. Para obtener la primera condición funcional, indispensable en este tipo de ano, se necesita seccionar la continuidad del intestino y que toda la sección transversal, de ambas ramas o del asa aferente sea implantada en el orificio practicado en la pared abdominal. Esta condición esencial puede lograrse de dos maneras: a) exteriorizando un asa intestinal sin seccionar su continuidad al principio y mantener separadas las dos ramas por un puente cutáneo; o b) haciendo la sección durante el mismo acto quirúrgico, cerrando el cabo eferente y dejándolo libre en la cavidad o aproximado a las paredes abdominales, y el aferente exteriorizado de la cavidad abdominal por el orificio artificial. Todos los métodos que no sigan una de estas dos directivas, traerán como consecuencia, las dos complicaciones mas frecuentes del ano ilíaco: el prolapso de la mucosa y del asa exteriorizada y la estenosis del orificio del ano.

Los anos en cañón de fusil, del tipo Madyl, están indicados solo para realizar anos temporales. Desde hace algún tiempo, hemos visto muchos enfermos en los que poco a poco el espolon realizado va achicándose; el contenido comienza a pasar al asa eferente y al cabo de uno o dos años tenemos que ya el espolon formado no realiza su primitivo papel. El contenido intestinal pasa en parte al asa eferente; la mucosa va deslizándose a través del orificio y lentamente comienza a exteriorizarse toda el asa y terminan con prolapsarse ambos cabos. Hemos visto varios enfermos (Obsvs. No. 17 y 22) que comprueban lo que aquí expresamos, y Pérez Carreño, cita en su trabajo "Estado actual de las estenosis del recto" (39) casos semejantes.

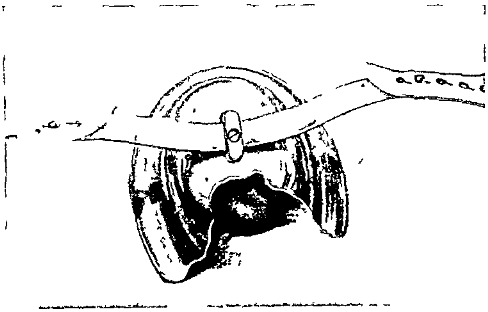
Los anos del tipo Madyl, Pérez Carreño etc. en que se exterioriza solo una pared del intestino, tienen gran tendencia a la estenósis cutánea del orificio, pues al no abocarse toda la circunferencia del intestino, la piel no encuentra una barrera que lo evite y estos enfermos tienen que someterse de tiempo en tiempo a la destrucción cutánea del orificio estenosado, lo que trae como consecuencia los enojos de una intervención repetida y la poca estética de la cicatriz.

LA CONTINENCIA DEL ANO ILIACO DEFINITIVO

La mayor incomodidad de los colostomisados, es la de la incontinencia del ano neo formado. A este punto se han dirigido todas las miras de los cirujanos, los que procuran con diversos sistemas devolver al individuo la continencia de las materias fecales y de los gases. El bienestar social, la capacidad de trabajo y la aptitud para realizar las funciones sexuales, dependen de la regulación de las evacuaciones y la emisión de gases, en todo momento. En los enfermos con rectitis infiltrativa linfogranulomatósica en sujetos jóvenes, constituye un punto de la mayor importancia Se conocen muchos procedimientos con el objeto de obtener un ano continente, la mayoría, con resultados relativos Entre otros tenemos dieta, uso de aparato receptor y pelota oclusiva

Estas tres medidas, pueden mejorar la salida de las materias y los gases, pero harían una vida muy triste a enfermas y enfermos jóvenes, el empleo de una dieta, que muchas veces no les permite su situación económica o usar un aparato receptor, que sí puede constituir un gran alivio, pero el continuo llenamiento y la necesidad de cambiarlo repetidas veces, producen una gran molestia De la pelota oclusiva podemos decir algo semejante Ocluye temporalmente pero las relaciones sexuales se hacen imposibles (Grabado No 1)

Paso del asa aferente al traves de un músculo estriado En este procedimiento se pensó que el paso del intestino a traves de los músculos abdominales, podria lograr la oclusión del termino del asa Se utilizan, de preferencia, el músculo recto (ano umbilical) y los músculos oblicuo mayor y el transverso Este procedimiento está fundado en hipotesis fisiológicas erradas Ningun musculo estriado puede mantenerse en tono, para poder lograr hacer el papel de esfinter La continencia lograda por estos sistemas es muy relativa y al fin solo realiza algo parecido a lo que hacen las modificaciones del calibre del asa eferente de que tratamos en el parrafo anterior



Grabado No 1 Pelota oclusiva para ano intestinal

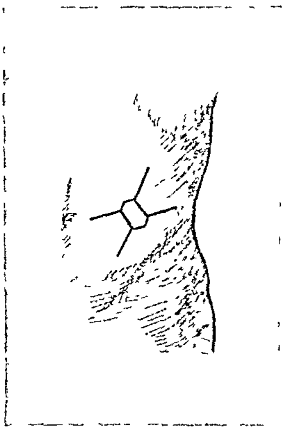
Modificaciones de calibre del asa intestinal Se han descrito y practicado varias técnicas en este sentido Entre otras podemos citar la de Gersuny (41) que consiste en rotar el intestino antes de suturarlo en 180° a 360° Suturas transversales de fruncimiento en las paredes intestinales (Schmieden, 34, Spivack 42) Colocación de un anillo metalico por fuera del intestino o anillo formado con cintillas aponeuróticas vecinas Estos métodos constituyen un obstáculo permanente para la explusión de las materias que las hace retardadas, pero sin obtener la contención de la emisión de gases y materias fecales (Grabado No 1)

Conducción del asa aferente en el subcutaneo en un trayecto mas o menos largo Este método propuesto por Frank, constituye algo mas real para la contención de las materias, que los anteriormente citados El asa aferente al salir de la pared muscular del abdomen, permanece elevada unos 10 cm del orificio cutáneo, atravezando ese trayecto al traves del subcutáneo y exteriorizándose por un orificio cutáneo a distancia (Grabados No 2 y 3)

La contención se hace comprimiendo con una pelota el asa subcutánea entre la piel y la pared muscular El método de Frank aparece mas efectivo, en cuanto a la con tención de materias, lo que depende de la presión que a voluntad comprima la pared abdominal. Una faja abdominal a la cual se le agrega en el sitio correspondiente al que ocupa el asa aferente una pelota, hace una contensión muy superior a la de todos los métodos anteriormente citados.

Hasta aquí hemos descrito los diversos procedimientos utilizados para lograr disminuir la salida espontánea de las materias fecales y gases. Del exámen hecho a varias enfermas operadas por estos métodos y por los datos recogidos de los diversos autores consultados, se llega a la conclusión de que ninguno de ellos puede traer una contención real. Con frecuencia oimos hablar de contención, porque un enfermo defeca solo en la mañana diariamente, sus materias sólidas. Esto no es contención; lo llamaríamos mas bien regularización de sus deposiciones, por costumbre. Estos enfermos no contienen gases, no contienen materias líquidas y el día que se administran un purgante o tienen deposiciones diarreícas, no existe en ellos contención alguna. Estos enfermos no defecan de contínuo sus materias sólidas, como lo hacen las enfermas con rasgaduras perineales completas hasta el esfinter, que pasan años con su defecto, llevando una vida mas o menos normal, con tal que no tengan diarrea o que vacíen su intestino diariamente en la mañana. Pero en el momento de tener lleno su intestino, en que haya necesidad de defecar, las materias saldrán espontáneamente sin que nada lo impida. Se trata de una contención relativa, un acostumbramiento, una higiene, que si bien es algo, no puede asegurarse a la voluntad que regule un tiempo mas o menos largo entre la necesidad de defecar y la expulsión de la materia. Es cierto que cualquier sujeto normal, cuando tiene diarreas o cólicos intestinales, se ve en la necesidad imperiosa de defecar en un tiempo mas o menos largo, pero su esfinter anal solo le hará que este tiempo sea lo suficiente como para poder llegar al sitio donde efectuarlo. Esto es lo que no se consigue con los métodos antes citados. Algunos de ellos pueden anatómicamente intentar algo, pero fisiológicamente ninguno. Los únicos que fisiológicamente logran acercarse a lo normal son los que utilizan un esfinter mecánico que regule la salida de las materias, por medio de la formación de un tubo de piel por debajo del asa aferente. De estos métodos trataremos a continuación y al final entraremos en materia sobre la técnica que proponemos citar en este trabajo.

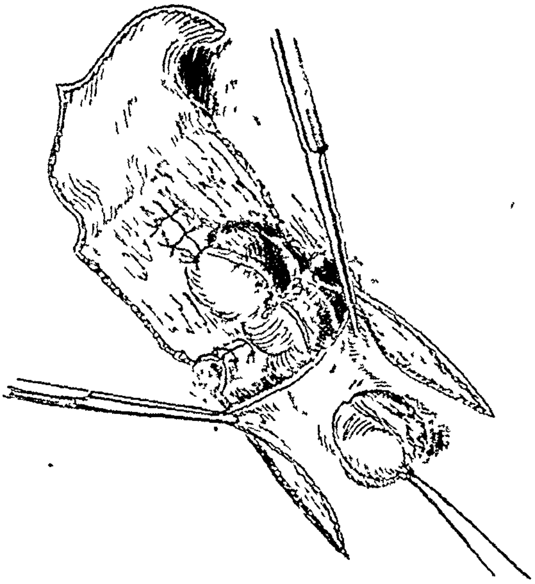
Contencion por medio de un tubo de piel y esfinter mecánico. Hay varias técnicas para la formación de un tubo de piel por debajo del asa aferente, para regular la salida de las materias fecales. Entre otros citaremos: la técnica de Kurtzahn, de Haecker, de Kischner, Ryal, Duncan, Fitzwilliams, Cuneo, etc., todos en general forman un túnel de piel, ya en el momento mismo de la formación del ano (Kurtzahn, Kischner, Cuneo) o en un segundo acto quirúrgico. De todas estas técnicas solo nos detendremos en la propuesta por Cuneo, a la que hacemos referencia en este trabajo.



Grabado No 4 Trazo de incisiones según la técnica de Cuneo.

Le técnica de Cuneo para el ano ilíaco continente. Este método descrito por Cuneo en la Presse Medicale, 30: 333 1922 y de nuevo expuesto por Gaillard en el tomo XXIII, pag 202 del Journal de Chirurgie, consiste en la formación de un túnel cutáneo, suturando los bordes de dos heridas paralelas y trazadas como pueden verse en los esquemas adjuntos, y luego haciendo dos colgajos en forma de cuadriláteros de bases opuestas, que por deslizamiento vendrían a suturarse por encima del asa intestinal. (Grabado No. 4)

La exteriorización del asa intestinal, se efectuaría debajo del colgajo superior, penetrando en el abdomen, siguiendo la técnica de Mac-Burney para apendicectomía. El intestino es seccionado transversalmente, al nivel del sigmoide o en el descendente. El cabo inferior se cierra siguiendo las técnicas usuales para ello. El cabo aferente se exterioriza siguiendo un trayecto subcutáneo, debajo de los colgajos y saliendo por un orificio situado en medio del colgajo inferior. Los esquemas adjuntos harán comprender mejor la técnica. (Grabado No. 5)



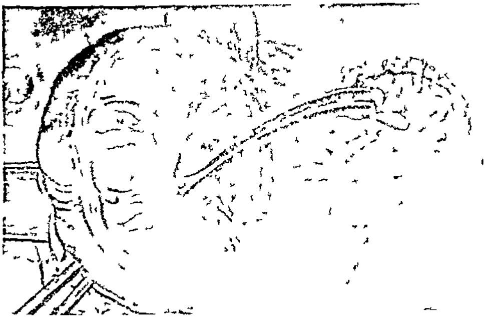
Grabado No. 5. Exteriorización del cabo superior y paso de su extremidad al través del colgajo inferior (Técnica de Cuneo).

Este método reune mayores ventajas sobre los otros métodos similares de Kurtzahn y Haecker. En el Kurtzahn, las heridas están muy cerca del orificio de salida de las materias fecales, lo que hace que la infección de éstas sea casi constante. (Grabado No. 6)

En el Haecker, la operación se hace en dos tiempos En el primero, se conduce una asa terminal a través de un trayecto subcutáneo siguiendo el método de Frank y en un segundo tiempo se forma el túnel cutáneo. En este último tiempo operatorio, si el ano fué realizado en sigmoide, el túnel debe hacerse en transverso y quedará el paciente con dos cicatrices en el abdómen. (Grabado No. 7)

Otra desventaja del ano de Haecker es el que para poder pasar el túnel por la brecha mesentérica, se necesita seccionar uno de los extremos del túnel y suturarlo de nuevo a la piel, lo que puede ocasionar una irrigación insuficiente del túnel con su consecutiva necrosis y perderse los beneficios del túnel. En efecto, este ano de Haecker es muy ventajoso cuando se quiere hacer continente un ano ya establecido. En la técnica de Kischner y la modificación de Welcker las técnicas son tan semejantes a la de Cuneo, que casi son una misma. Solo se le diferencian en que realizan la intervención en dos tiempos, algo semejante como se hace en el Haecker.

La técnica de Cuneo, reune las mayores ventajas y en ella se realiza de una vez la colostomía y el sistema de continencia con la *formación del tunel cutaneo* y el deslizamiento subcutáneo, el paso al través de la brecha muscular y la disminución del calibre del orificio anal Como veremos en su descripción y en los esquemas adjuntos esta técnica reúne en una sola todos los procedimientos ideados para la contención de las materias [illegible] uso de *aparato receptor* [illegible] del calibre del asa aferente [illegible] de un músculo estriado Conducción del asa en un trayecto subcutáneo (Frank) y *formación del tunel cutáneo*) para que el enfermo en un momento dado, pueda a voluntad, por el tiempo que quiera, asegurarse de la contención de sus materias Estos anos con tunel cutáneo para esfinter mecánico, son los únicos conocidos hasta hoy con los que podemos asegurar a nuestros enfermos que tendrán de manera eficaz y no al azar de un acostumbramiento, una continencia real A veces ante ciertos casos que se nos presentan, nos vemos en la necesidad de recurrir a la formación de un ano definitivo, hay que procurar que este sea lo menos molesto y lo mas semejante a la fisiología normal El ano artificial constituye una desgracia y si a esto se agrega la incontinencia de materias y gases, insegura en otros metodos, un orificio grande etc, se han aumentado los sufrimientos y se ha hecho del enfermo un incapacitado social La mayor parte de los enfermos linfogranulomatósicos, son sujetos jóvenes, hombres y mujeres de 20 a 30 años, en plena actividad sexual y física, que desean vivir y reclaman se les deje en capacidad de poder trabajar y gozar sus años Cuando se les propone la formacion del ano, lo primero que preguntan es acerca de su continencia y el cirujano debera ofrecerles esto, ya que esta en sus manos que el enfermo contenga de verdad en el momento que lo necesite



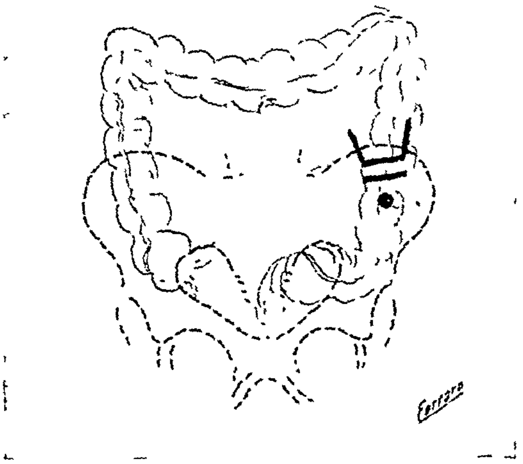
Grabado No 7 Formación de un regulador de evacuaciones segun tecnica de Haecker

La modificación Corachán El Profesor M Corachán, en su estadía en Venezuela, nos hizo conocer el ano de Cuneo con su modificación Consistia en la supresión del colgajo inferior, dejando solo el colgajo superior, de modo que la cicatriz quedase en la forma que expresamos en el esquema (Grabado No 8)

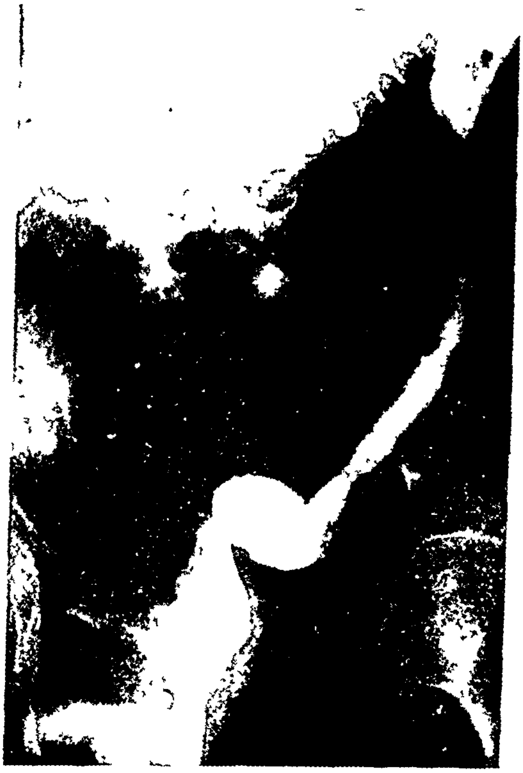
NUESTRA MODIFICACION

En las ocasiones de llevar a la práctica la técnica de Cuneo modificación Corachán, nos hemos lanzado a suprimir por completo, siempre que fuera posible, las incisiones del colgajo superior, ya que hemos visto que muy bien podia exteriorizarse el asa intestinal, haciendo un buen despegamiento subcutáneo de la herida superior y rechazando fuertemente hacia arriba con un separador el borde superior de la herida, después de formado el túnel cutáneo A continuación expondremos detalladamente los pormenores de la técnica seguida para la formación de este ano

Indicaciones del ano continente Cuneo modificado. Este tipo de ano requiere hacerlo tecnicamente mediante un conjunto de detalles operatorios, pues sin ellos no podría obtenerse el resultado que se espera de una intervención correcta. El ano continente según este método, es un ano de elección, no de necesidad. De técnica sencilla, pero cuidadosa, realizable en todos aquellos pacientes en que su ano sea concebido de un modo definitivo y que tengan una larga sobre-vida despúes de operados.



Grabado No. 8. Trazado de incisiones del ano Cuneo modificado por Corachán.

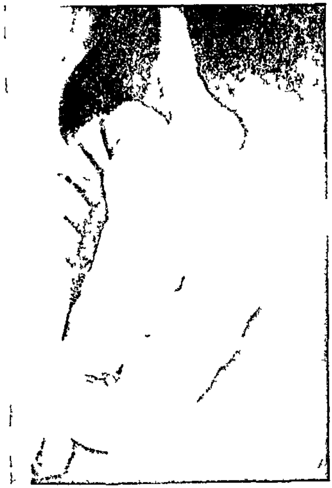


Grabado No. 9. Estudio radiográfico de estenosis alta del colon descendente y sigmoide.

Sítio de elección. El sitio de elección es la fosa ilíaca y flanco izquierdo, excepcionalmente en la región umbilical (Ano del transverso). Depende de la altura de las lesiones colónicas el sitio en que deba de realizarse. Como ya hemos dicho al principio de este trabajo, casi todos los enfermos a quienes hemos practicado esta colostomía, fueron sujetos linfogranulomatósicos. Sabemos que estas lesiones, pocas veces llegan al sigmoide y en mas raras ocasiones al descendente. No obstante, nosotros tuvimos enfermos en que sus lesiones llegaron al ángulo esplénico y en que hubimos de realizar un ano en el transverso y el Dr. Luciani publicó recientemente un caso de estenosis en colon descendente. (Grabado No. 9)

El procedimiento operatorio para conocer el sitio del colon que deba seccionarse es el siguiente: con estudios radiológicos obtenidos tomando el medio de contraste por ingestión y por enema, logramos en la mayor parte de las veces, conocer con mas o menos exactitud, ayudados por la rectoscopia con tubo delgado, la altura de las lesiones. (Grabado No. 10)

Sí éstas no llegan a sigmoide, hacemos el ano entre el flanco y fosa ilíaca izquierda y una vez explorado el sigmoide y descendente hacemos la sección intestinal en sigmoide y



Grabado No 10 Estudio radiológico de estenosis rectal baja (Obs No 19)

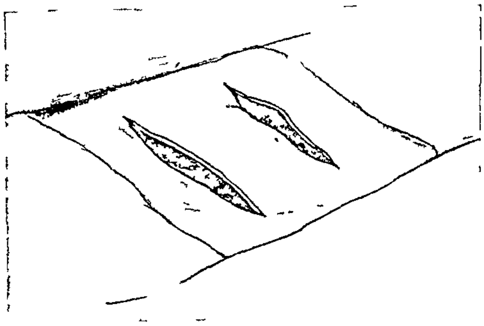
preferentemente en descendente Si las lesiones han llegado a sigmoide o ésta se encuentra adherida, lo que imposibilita su exteriorización, practicamos una celiotomía media supra e infraumbilical y haciendo una mejor exploración escojemos el sitio de eleccion De este modo sol nos quedarian dos sitios en donde exteriorizar el colon ángulo esplénico y colon transverso

Preoperatorio Al futuro colostomisado administraremos enemas evacuadores y de limpieza intestinal unas 48 horas antes de la operación Despues de efectuada la anestesia, introducimos una sonda o una bujia uretral dura, por el recto a modo de referenciar el cabo interior con seguridad

Anestesia Hemos dado preferencia a la anestesia raquidea baja con novocaina, como anestesia de eleccion en las intervenciones de la parte inferior del abdomen La anestesia raquidea nos ha dado megnificos resultados y es mucho menos peligrosa que una anestesia general que la usamos excepcionalmente

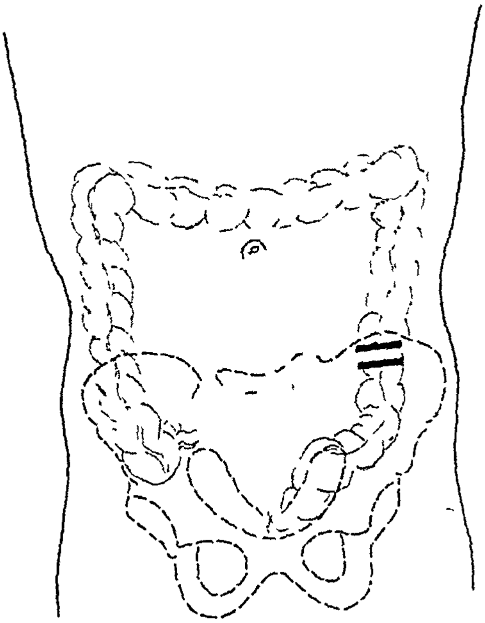
Tecnica operatoria Dos incisiones horizontales de unos seis centímetros de largo, paralelas y distantes una de otra tres centimetros (Grabado No 11)

Grabado No 11

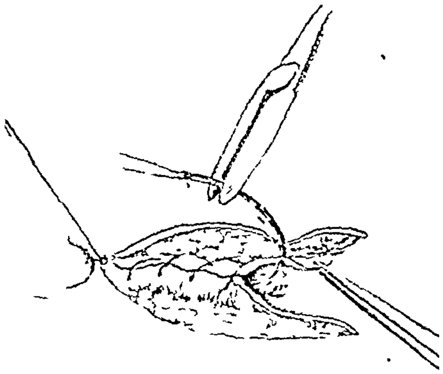


La extremidad externa de la incisión inferior debe comenzar a dos traveses de dedo dentro de la espina ilíaca antero superior del hueso ilíaco. Incisiones que llegan hasta la aponeurosis del oblicuo mayor.

Hemostasia de vasos subcutáneos. (Grabado No. 12)



Grabado No. 12



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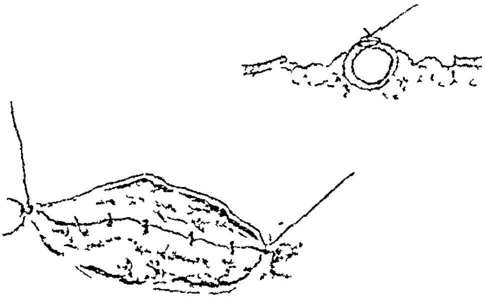
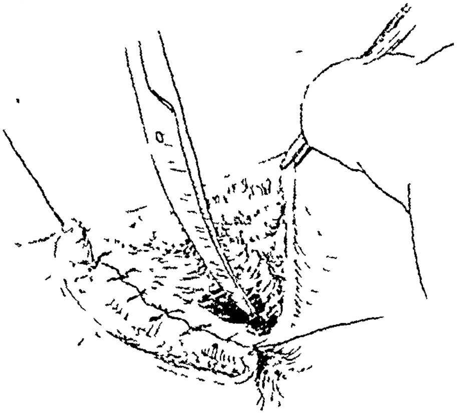


Grabado No. 14

Formación del túnel cutáneo. Practicando una sutura invaginante intradérmica con catgut crómico y a modo de sutura tipo Lembert o Cushing de los bordes centrales de las dos incisiones. Se dejan referenciados los dos puntos terminales para al final hacer una buena sutura de los orificios del túnel. (Grabados No. 13 y 14)

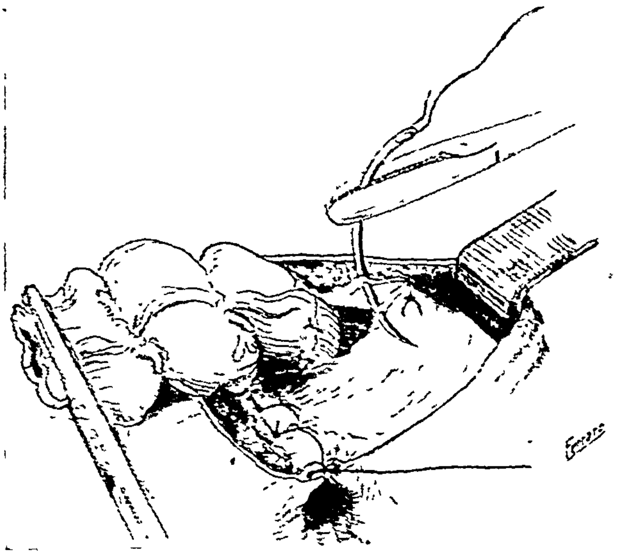
Despegamiento de la herida superior y exposición de aponeurosis de oblicuo mayor. *Incisión de aponeurosis de oblicuo mayor*, disociación muscular y sección de peritoneo (MacBurney). (Grabados No 15 y 16)

Prehensión y exteriorización de sigmoide. Exploración. (Grabado No. 17)



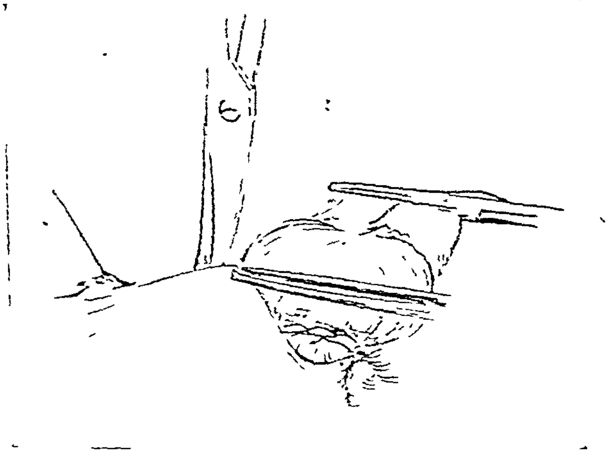
Grabado No. 15

Sutura de la aponeurosis del oblicuo mayor, dejando un orificio por donde pasa el colon del diámetro de un dedo meñique. Este tiempo es muy delicado pues una brecha muy grande traerá consigo una eventración y una muy estrecha puede ocasionar la gangrena del asa exteriorizada. (Grabado No. 20)



Grabado No. 20

Despegamiento subcutáneo de la piel de la herida inferior. Tomando la piel por debajo de la herida en su parte media a unos dos centímetros. practicamos un orificio circular con tijeras de dos centímetros de diámetro. Por allí exteriorizamos el asa intestinal. (Grabados No. 21 y 22)



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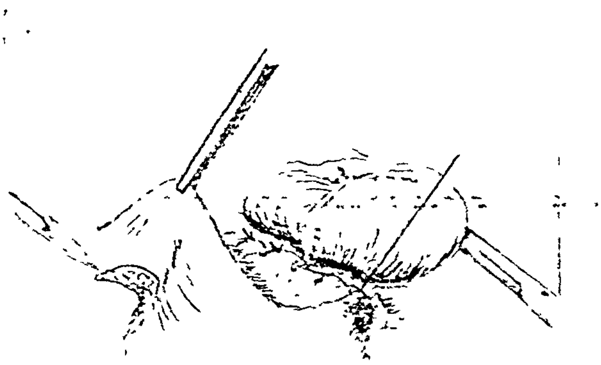
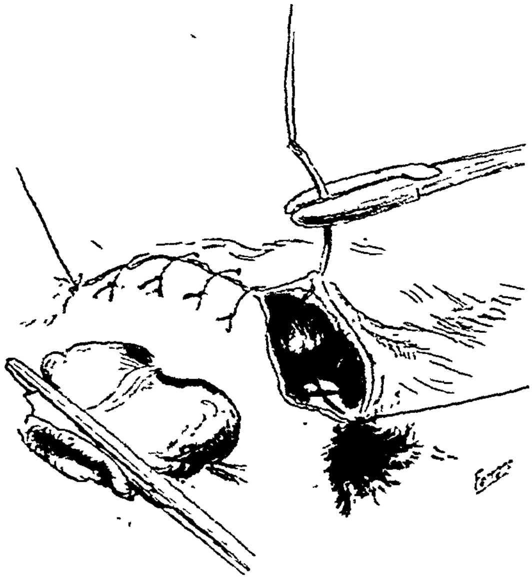


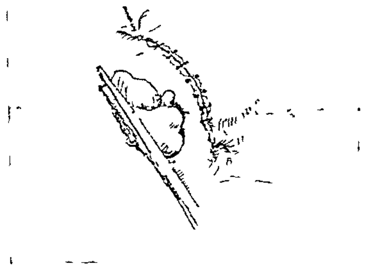
Grabado No. 22

Sutura de la piel por encima del asa intestinal, aproximando los bordes de la herida. Un punto interesante es la formación de los ángulos. (Grabado No. 23)



Grabado No. 23

Cuando hicimos el túnel cutáneo dejamos referenciados los puntos extremos con hilo largo y pinzas. Ahora tiramos de este hilo a modo de poder presentar los bordes del orificio del túnel cutáneo y hacer una buena coaptación de la piel. Esto es indispensable para dejar un buen orificio, permeable y lograr una cicatrización correcta.



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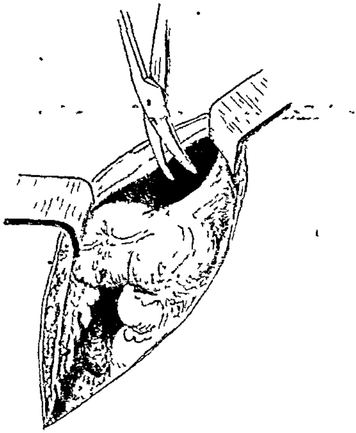


Grabado No 25

El intestino va exteriorizado por el orificio del ano, se fija con algunos puntos a la piel, aunque esto no es necesario (Grabado No 24)

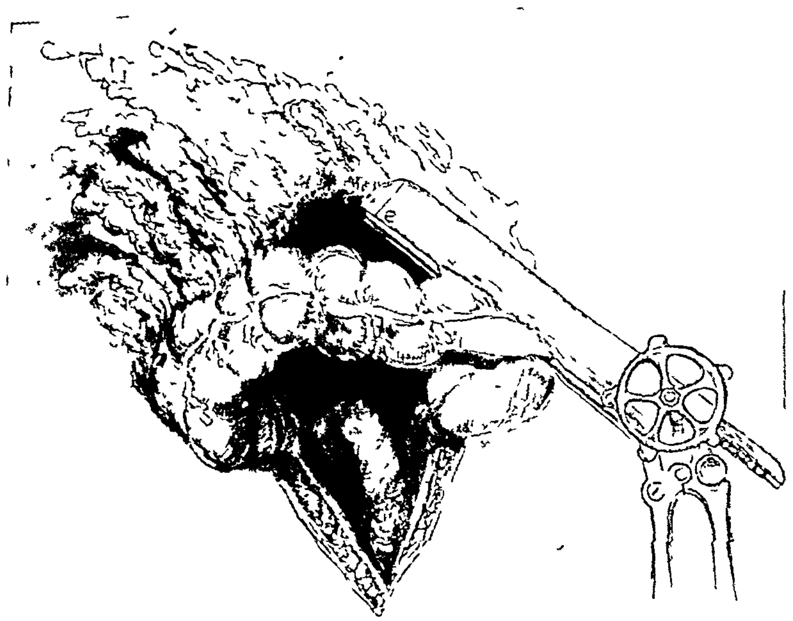
Vertemos colodión en la herida y colocamos gasa El colodión sirve para proteger la herida de las materias fecales Esta cura no la levantamos hasta el décimo día, en que cortamos la sutura de la piel Esta sutura la realizamos siempre con hilo de lino, dando preferencia a los puntos en U

El asa intestinal exteriorizada, la dejamos cerrada con la pinza o con las grapas de la pinza de Petz por unas 24 ó 48 horas Luego la abrimos para que salgan gases y materias

Ano iliaco alto No siempre puede realizarse un ano en descendente o sigmoide Cuando estas lesiones no han tomado el angulo esplenico, nos valemos de él para practicar la colostomía Previa laparatomía exploramos el colon, seccionamos el peritoneo siguiendo el repliegue del colon y la pared abdominal, seccionamos el ligamento esplenocólico y despegamos el ángulo esplénico Para realizar estas maniobras en un espacio tan profundo, procedemos del modo siguiente con una valva vaginal de Doyen, *rechazamos el borde de la herida laparatómica y cargando* toda la pared abdominal con la mano izquierda rechazamos hacia abajo y dentro todas las asas intestinales y bien visualizado el angulo esplénico, con unas tijeras grandes realizamos esta sección (Grabado No 25)

Exteriorizado el ángulo esplénico, hacemos la sección intestinal y del mesocolon tal como describimos en el ano sigmoideano, y cerramos el cabo inferior Aquí es mejor usar siempre la engrapadora de Petz, para una mejor asepsia Procedemos en el flanco izquierdo *a practicar el túnel cutáneo y demás* tecnicas conocidas ya descritas y exteriorizamos el asa aferente, como se indica anteriormente Cerramos la pared abdominal Cuando las lesiones invaden el ángulo esplénico, recurrimos al colon transverso previo decolamiento coloepiploico de la mitad izquierda del colon y hacemos el ano en región ilíaca o si allí no llegase el colon en región umbilical, esto preferimos al ano umbilical (Grabado No 26)

Postoperatorio *La conducta postoperatoria* de estos colostomisados, en nada varía de la seguida en las colostomías de otras técnicas A estos enfermos se les quita la pinza obturadora del colon exteriorizado a las 24 horas y nosotros colocamos una tela de caucho al cual hemos practicado un orificio por donde



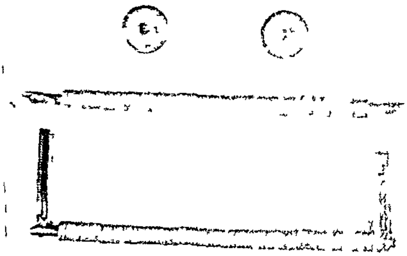
Grabado No 26

pasamos el asa intestinal, de modo que las materias fecales no ensucien el apósito de las heridas (Grabado No. 27)

El asa intestinal la dejamos de unos 5 ó 6 centímetros de largo y luego vemos, como poco a poco ésta va reduciéndose y si tarda mucho en hacerlo, con thermocauterio se ejecuta una nueva sección, dejando un asa de unos tres o cuatro centímetros. Al término de un mes, ya el exceso de asa exteriorizada no existe y queda reducida al orificio cutáneo. Muy al contrario a los otros anos, que tienden la mucosa a prolapsarse, en estos tipos de ano, va reduciéndose cada vez más y al cabo de tres o cuatro meses no existe mucosa en relieve sobre la piel La sutura de la piel de la herida laparatómica la cortamos a los diez días. Hay que tener especial cuidado en el túnel cutáneo. Preferimos al principio no tocarlo, solo hacer lavados con suero fisiológico y si hay alguna supuración, con solución al 2% de mercuro cromo. Cuando el túnel se encuentra ya cicatrizado mas o menos, procedemos a practicar catelerismos dilatadores del mismo con bujías de Hegar No 3-4-5-6-y hacemos varias sesiones tres o cuatro antes de colocar la pinza de contención.

Grabado No 27 Delental de hule destinado a proteger las heridas del ano artificial

La contención en el ano Cuneo modificado. Ya dijimos al principio que este tipo de Colostomía reune en una sola operación todos los métodos ideados hasta el presente para la contención de las materias. Así es que el ano de este tipo, sin necesidad de pinza mecánica alguna, contiene lo mismo o mas que todos los anos hechos por las técnicas conocidas hasta hoy Los enfermos operados de este modo, no necesitan valerse del esfinter mecánico, que en realidad puede serles molesto su uso continuo La mayoría de los enfermos usan una faja elástica corriente, (faja tubular de las mujeres) y algunos bajo el punto de vista estético, se colocan un pequeño adhesivo que oculte



Grabado No 28 Primer tipo de pinza Un tallo A en cuyos extremos se articulan dos tornillos Este tallo penetra en el tunel cutaneo

Un tallo B con dos ojales en sus extremos y por los cuales penetraran los tornillos colocados perpendicularmente

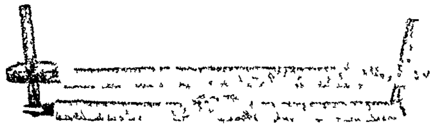
La presión se efectua con pequenas tuercas

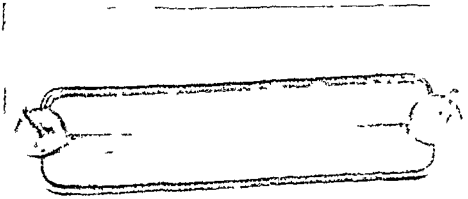
la mucosa del ano Esto es suficiente para tener una continencia muy buena Pero ya hemos dicho de la ventaja que tiene este metodo *con el cual podemos, asegurar de modo absoluto la consecucion de una contención definitiva cuando se quiera* y para ello recurrimos a una pinza metalica que hemos de construir en dos modos (Grabados No 28 y 29 30 y 31)

Estas pinzas las utilizan los enfermos en caso de necesidad Muchos, no recurren a ellas, principalmente los de clase social humilde Otros, sin embargo, las usan a diario Pero su mayor aplicacion se encontrara en aquellas urgencias de la vida corriente, como en el dia que se tenga diarrea que se haya de ir a alguna fiesta, etc, pues entonces les conviene estar seguros de que su ano funcionara de un modo definitivo

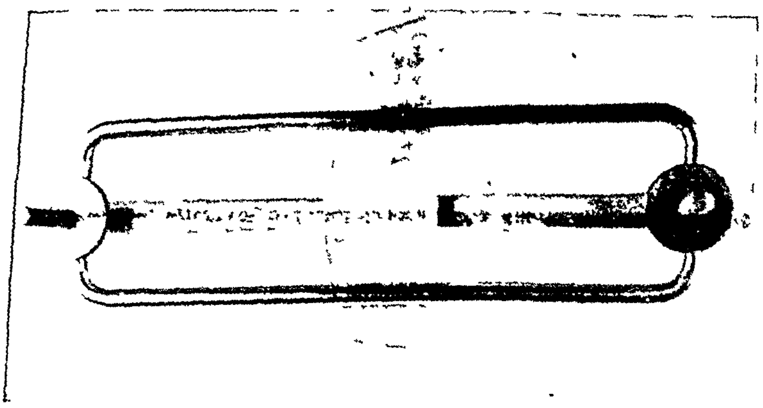
Enferma colocandose el esfinter mecanico (Grabados No 32 33 34 y 35)

Grabado No 29 Primer tipo de pinza

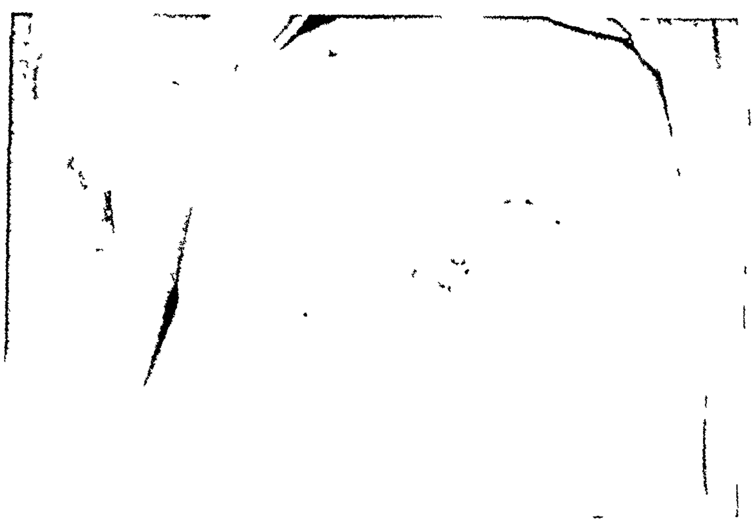




Grabado No 30 Segundo tipo de pinza El tallo superior se cambia por un cuadro, de modo que la presion no se haga en un solo sentido y asi presente menos riesgo de que en un momento dado esta pueda ser excesiva



Grabado No. 31. Segundo tipo d pinza.



Grabados No. 32-35. Enferma colocándose el esfinter mecánico

Enferma defecando. (Grabado No 36)

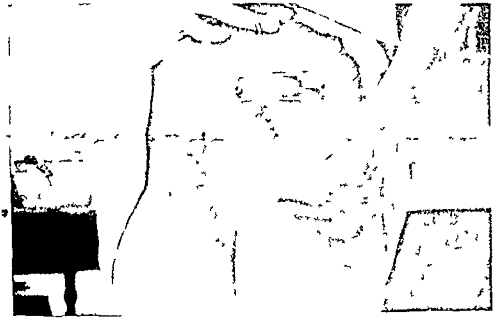
Un ano ilíaco definitivo continente dos años después de realizado. (Grabado No 37). Obs. No. 10

RESULTADOS OBTENIDOS

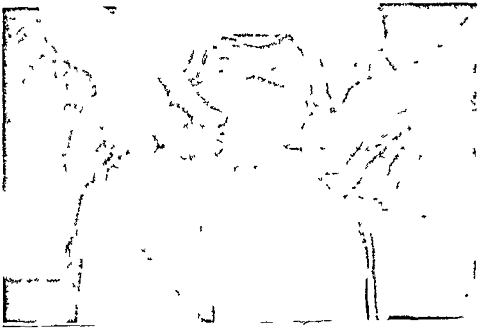
Esta técnica la venimos practicando desde el tiempo ya dicho En un principio tuvimos que lamentar algunos inconvenientes, debido a ciertas deficiencias, pero no al procedimiento mismo Estos fueron: las observaciones No. 8 y 14 en que por efecto de nuestro interés al obturar demasiado el asa aferente, *comprimimos tanto que hubo en el postoperatorio* inmediato una gangrena del asa intestinal Estos enfermos no tuvieron mayor inconveniente sino el de perder los beneficios de su continencia, con supresión del túnel cutáneo Meses mas tarde, cuando ya estaba cicatrizada la piel hicimos un ano mas alto, sin encontrar inconveniente alguno. Otro pequeño inconveniente fué el de dos anos en las observaciones No. 11 y 21 por dejarse completamente abierta la brecha aponeurótica, hubo una pequeña eventración que fué corregida meses mas tarde, sin dificultades.

En la observación No. 16 la enferma murió de peritonitis aguda al cuarto día. La autopsia practicada por el Profesor Jaffé, demostró que una sonda rectal introducida por el ano artificial, había perforado el asa intestinal en su acodadura y esta perforación fué la causante de una muerte por peritonitis sobreaguda. En este caso el exámen del asa introducida en el abdómen demostró su sutura perfecta.

Esto es todo lo que en nuestros casos operados tenemos que lamentar. En la observa



Grabado No 33



Grabado No 34

Grabado No 35

ción No. 16 de muerte, no podemos atribuirla al método, pues esta sonda hubiera podido perforar el asa intestinal de cualquier tipo de colostomía.

Pasados estos pequeños trastornos, hemos visto con el tiempo y observando a todos nuestros enfermos que acuden de tiempo en tiempo a controlarse, los beneficios de esta colostomía. El aspecto estético es el de lo mas aleatorio. El orificio del ano se reduce con el tiempo al diámetro de un centímetro y a primera vista parece casi impercibible. La mucosa no tiene tendencia al prolapso, al contrario, cada vez más se hunde y no ofrece relieve por fuera de la superficie de la piel. Nuestros enfermos colostomisados, se encuentran en plena actividad social, habiendo entre ellos: lavanderas, cocineras, mujeres de la vida, mecánicos, chauferes, etc. Su colostomía no les ha traído trastornos de ninguna espece. Su vida sexual es normal y algunas enfermas son prostitutas profesionales. La continencia de estos anos, la realizan sin el uso de la pinza, la que solo dejan para momentos extremos. Es muy satisfactorio ver como estos enfermos traen a nuestros servicios, compañeros de enfermedad o portadores de un ano de otro tipo para que lo hagamos continente.

CRITICAS

Al ano de Cuneo modificado se le han hecho algunas críticas. Varias de ellas fundadas en razones, pero no comprobadas por hechos. Entre otras tenemos:

1) *El ano de Cuneo modificado es de técnica difícil y traumatizante.*

En verdad, la técnica de la colostomía definitiva es de mayores cuidados que en la de una colostomía corriente. Por ello dijimos al principio que su técnica era de *elección* y no de *emergencia*. Es cierto que para realizarse se hace necesario que el cirujano conozca bien la técnica y todos los detalles para hacer un buen trabajo. La dificultad existe [illegible] pocas técnicas quirúrgicas [illegible] que en efecto es poco [illegible] mente realizable por cualqu[illegible]. Para un médico en general, que [illegible] necesidad de practicar una colostomía, no le podríamos aconsejar que ejecutara este método, pues con toda seguridad no podrá llevarlo a cabo sin tener la habilidad quirúrgica suficiente. Lo de que el método es mas chocante que los demás, no estamos de acuerdo. He realizado esta intervención en 45 minutos, como tiempo medio y no he tenido en los casos que he operado estado de shoc por la intervención. Así mismo opino que no podrán someterse a ella, enfermos de emergencia en estado general muy malo, pues para estos casos hay que recurrir a un procedimiento mas sencillo.

2) *En la técnica del ano continente definitivo Cuneo modificado, se deja el cabo inferior en el abdómen cerrado, lo que imposibilita practicar los lavados medicamentosos para la rectitis.*

Esta crítica se haría mas bien al tratamiento de la rectitis infiltrativa a virus poradénico, de cuyo interés nos ocuparemos en otra ocasión y en que podremos referir los hechos que hemos observado. Para la ejecución de esta técnica tenemos los hechos comprobados con nuestra experiencia, como con la de otros profeşionales. Actualmente, solo diremos que la colostomía se realiza en estos casos para poner en reposo al recto, lo que basta para traer la curación de las lesiones rectales. Esto ha sido comprobado después de cuatro años de experiencia en esta materia. Si se quieren practicar lavados, puede utilizarse la vía anal, siempre que esta permanezca permeable, lo que se notará mientras queden lesiones de rectitis en la mucosa.

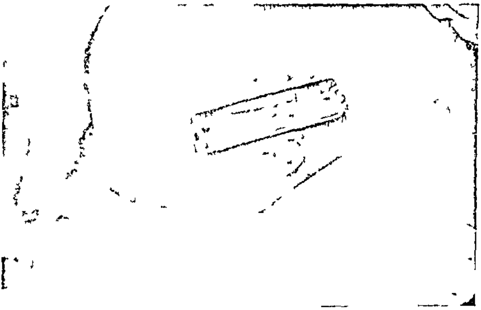
CONTRAINDICACIONES DEL ANO CUNEO MODIFICADO

Realizar la sección en colon enfermo.

Realizar el cierre del cabo inferior y su hundimiento en el abdómen, en los casos de cáncer del recto, si esta formación del ano no va seguida de la extirpación del recto, pues las lesiones cancerosas pueden ocluir el segmento inferior y sus secreciones hacen estallar el asa cerrada.

En enfermos muy caquectizados que requieren una intervención la mas rápida posible y menos chocante.

Grabado No 36 Enferma defecando



Grabado No 37 Un ano iliaco definitivo continente dos anos despues de realizado Obs No 10

CASUISTICA

Obs No 1—Hospital de la Cruz Roja Servicio de Cirugía del Dr Baquero Historia No 167

O R—30 años de edad, sexo masculino, raza blanca, natural de Nirgua, soltero, botiquinero

Diagnostico Estrechez rectal a virus poradenico

Tratamiento 23 XI 1938 Colostomia definitiva en descendente Tecnica Cuneo modificada Anestesia raquídea baja con novocaína

Postoperatorio inmediato normal

Postoperatorio tardio ano funciona bien Continencia sin pinza, solo la utiliza en casos necesarios En 1939 le fué practicada extirpación abdomino perineal del recto

III 1941 Estado general bien Su ano muy bien Orificio de 1 cm de diámetro

Obs No 2—Hospital de la Cruz Roja Servicio de Cirugía del Dr Baquero Historia No 105

M M—23 años de edad, sexo femenino, raza mestiza natural de Cumaná, soltera, oficios domesticos

Diagnostico Estrechez rectal a virus poradenico

Tratamiento 12 X 1938 Colostomía Cuneo modificada Anestesia raquidea baja con novocaina

Postoperatorio inmediato normal

Postoperatorio tardio sin novedad

23 VI 1939—La enferma ha engordado diez kilos Su ano funciona bien, hay continencia sin necesidad de pinza La supuracion del recto desapareció La rectoscopia demuestra que toda la mucosa esta cicatrizada La estrechez rectal se ha hecho infranqueable

15 III 1940—La enferma continua bien Lleva su vida normal Trabaja de Camarera en una casa de familia La continencia del ano es la de cualquier persona normal No necesita usar esfinter mecánico El ano lo cubre con un adhesivo y a primera vista no se percibe La vida sexual es normal Ha tenido varios esposos después de operada El recto no supura

Obs. No. 3.—Hospital Vargas. Sala No. 19. Historia No. 107.

L.P.—29 años, sexo femenino, raza blanca, natural de Aroa, soltera, oficios domésticos.

Diagnóstico: Estrechez rectal linfogranulomatósica.

Tratamiento: Colostomía definitiva. Técnica Cuneo modificada.

Postoperatorio inmediato: normal.

Postoperatorio tardío: cuatro meses después continúa la supuración rectal. Ingresa al Hospital de la Cruz Roja. Le fué practicada una extirpación abdomino perineal del recto en el Servicio del Dr. Baquero por el Prof. Corachán. La enferma murió por peritonitis al sexto día.

Obs. No. 4.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero. Historia No. 194.

S.S.—37 años, sexo femenino, soltera, de raza mestiza, natural de Antímano, oficios domésticos.

Diagnóstico: estrechez rectal a virus poradénico.

Tratamiento: 21-XI-1938. Colostomía definitiva. Técnica Cuneo modificada.

Postoperatorio inmediato: normal.

Postoperatorio tardío: 1-VI-1939. Su ano funciona bien. Tiene una eventración en la parte del colgajo superior que abomba sobre la superficie del abdomen. Ingresa de nuevo al Hospital el 6-VI-39. Se interviene realizando cura operatoria de su eventración. Postoperatorio inmediato: normal. Postoperatorio tardío: normal. El recto no supura. El ano es continente. No necesita usar esfínter mecánico.

Obs. No. 5.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero. Historia No. 318.

E.F.—26 años, natural de Caracas.

Diagnóstico: Estrechez rectal a virus poradénico.

Tratamiento: Colostomía Cuneo modificada. 22-XII-1939. Anestesia raquídea baja con *novocaína*.

Obs. No. 6.—Por la sonda sale un líquido amarillo muy fétido. Por el recto hay pus.

8 a.m. Los vómitos continúan.

9 ½. Continúa el enfriamiento. El pulso radial no se percibe.

10.45.—La respiración es superficial, se indica suero continuo endovenoso. La piel esta amoratada.

11.—La enferma murió.

12. a.m. El Prof. Jaffé acude al hospital a practicar la autopsia del cadáver. Se encontró una peritonitis generalizada, con asas aglutinadas y líquido peritoneal purulento. Existe una perforación en el asa intestinal aferente en la cara posterior del tamaño ½ cm. La sonda introducida por el ano, se encuentra atravesando dicho orificio. El asa inferior se encuentra normal. La sutura obtura completamente el intestino.

Diagnóstico: peritonitis por perforación del asa aferente.

Obs. No. 7.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero R. B.—40 años, sexo femenino, casada, natural de Barquisimeto.

Diagnóstico: Estrechez rectal a virus poradénico.

Tratamiento: Colostomía Cuneo modificada. 13-IX-1939.

Postoperatorio inmediato: normal.

Postoperatorio tardío: 20-X-1939. Ano funciona bien. Contención buena. No necesita pinza. Aspecto estético: muy bien.

Obs. No. 8.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero. Historia No. 214.

P. L.—29 años, sexo masculino, natural de Macuto, chaufer.

Diagnóstico: Estrechez rectal y sigmoideana.

Tratamiento: 12-VII-1939. Laparatomía mediana. Se explora el sigmoide y se encuentra con lesiones estenosantes que impiden su movilización. Se hace despegamiento de ángulo esplénico y se construye un ano ilíaco con exteriorización de ángulo esplénico de colon. Anestesia raquídea alta con novocaína.

Postoperatorio inmediato: nórmal.

Postoperatorio tardío: 3-X-1939. Ha engordado 7 Kg. Trabaja en su profesión de chaufer. Defeca diariamente en la mañana. No necesita usar la pinza la que guarda para ciertas ocasiones. El túnel cutáneo es permeable.

15-IV-1941.—El enfermo continúa bien. Aun hay alguna supuración por el recto. Se indican sulfamidos y esperamos para su intervención de extirpación del recto.

Obs. No. 9.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero. Historia No. 224.

M. L.—26 años, casado, sexo masculino, raza mestiza, natural de Caracas, chaufer.

Diagnóstico: estrechez rectal, sigmoideana y en descendente. A la laparatomía se observó que las lesiones llegaron hasta ángulo esplénico. Asociación de amibiasis y bilharziosis. El Frey fué negativo. El estado general de este enfermo era muy precario.

Tratamiento: Laparatomia mediana. Despegamiento de ángulo esplénico. Colostomia ilíaca de colon transverso. Técnica Cuneo modificada. 9-IIX-1939.

Postoperatorio inmediato: 14-IIX-1939.—Hay necrosis del asa exteriorizada. El enfermo continúa bien. Abrimos ampliamente la piel quitando las suturas y dejando abierto para la salida de las materias, la que se hace regularmente. Introducimos una sonda por el ano artificial.

16-IIX-1939.—Sindrome oclusivo. Se practica laparatomía. Se encuetra un asa delgada distendida y aprisionada por una brida de epiplón. El resto de las vísceras, normales. Se hace enterostomia.

22-IIX-1939.—El enfermo presenta un estado pulmonar con expectoración abundante sanguinolenta, tos y dolor costal. Se llama al Dr. Valencia del Servicio de Medicina, en consulta.

23-IIX-1939.—El estado del enfermo es el siguiente: El ano y la enterostomia eliminan bien. El estado general cada día empeora. El enfermo ha enflaquecido mucho. Su estado pulmonar es cada día mas manifiesto. Un exámen de esputos demuestra la presencia de abundante bacilos de Koch.

25-IIX-1939.—El enfermo murió con el diagnóstico de Granulia T.B.C.

Obs. No. 10.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero. Historia No. 383.

P. B.—24 años. Sexo femenino, natural de Maiquetía, casada.

Diagnóstico: Estrechez rectal a virus linfogranulomatósico.

Tratamiento: Colostomía definitiva continente. Técnica Cuneo modificada.

Postoperatorio inmediato: normal.

Postoperatorio tardio: 23-IIX-1940. Se siente bien. Defeca cada 24 horas. Siente ganas de defecar y puede hacerlo bien. Muy poca supuración por el recto. No usa pinza. Ano artificial estéticamente muy bien.

23-V-1941. La enferma ha engordado mucho. Continúa muy bien el funcionamiento de su ano. Se ocupa del negocio de comercio y viaja constantemente a Curacao. Se siente contenta y *no le pesa* haberse operado.

Obs. No. 11.—*Clínica González Lugo.*—Historia No. 1719.

C.C.—40 años de edad, natural de Barinas. Casada.

Diagnóstico: Estrechez rectal linfogranulomatósica.

Tratamiento 20 II 1940 Colostomía definitiva continente Técnica Cuneo modificada

Postoperatorio inmediato normal

Postoperatorio tardío Presentó una eventración por ensanchamiento de la brecha aponeurótica que da paso al asa intestinal 5 II 1941 —Se hace cura operatoria de eventración Resultado curación

Su ano marcha bien No usa la pinza Sus lesiones rectales están cicatrizadas

Obs No 12 —Hospital de la Cruz Roja Servicio de Cirugia del Dr Baquero Historia No 366

M A 36 años de edad, sexo femenino, raza mestiza natural de La Victoria Casada

Diagnóstico Estenosis rectal a virus poradenico

Tratamiento Ano iliaco definitivo Técnica Cuneo modificada Anestesia raquídea baja

Postoperatorio inmediato normal

Postoperatorio tardio 15 IV 1941 —Ano m[illegible] La enferma ha engordado 10 Kg Contrajo matrimonio y lleva una vida matrimonial muy feliz Sus relaciones sexuales son normales

Rectoscopia Las lesiones del recto estan cicatrizadas No hay supuracion

Enferma curada Usa su pinza en ocasiones para la contención que regularmente hace bien

Obs No 13 —Hospital de la Cruz Roja —Servicio de Cirugia del Dr Baquero Historia No 544

L R —38 años de edad, sexo femenino, natural de Turmero, divorciada

[illegible] a tipo estenosante

ostomia iliaca de

modificada Anestesia raquidea

Postoperatorio inmediato normal

Postoperatorio tardio 17 VI 1941 —Ha engordado 5 Kg Su estado general es magnifico El ano funciona muy bien No usa pinza hasta hoy por no tenerla

Obs No 14—Hospital de la Cruz Roja Servicio de Cirugía del Dr Banquero Historia No 108

A W —24 años de edad, sexo masculino, natural de P

virus poradenico

iliaco definitivo

ada

Postoperatorio inmediato Se produjo una necrosis del cabo exteriorizado Se abrió la herida que cubría esta asa y se dejó abierta ampliamente Quedo un ano sin trayecto subcutáneo El resto del postoperatorio sin novedad

Postoperato

Se somete en

úrgica para

mediana Desprendimiento del ángulo esplénico del colon por debridamiento del ligamento frenocolico izquierdo Incision del colon esplénico Sutura del cabo inferior sero musculosa Formación del ano iliaco definitivo Técnica Cuneo modificada

2 XII 1940 —El enfermo está bien Ha engordado Su ano funciona satisfactoriamente Usa la pinza en ocasiones Continua la supuracion del recto El orificio del ano primitivamente gangrenado ha cerrado espontáneamente

Obs No 15 —Hospital Vargas Servicio de Cirugía No 2 —Historia No 958

B F 26 años de edad, sexo femenino, raza negra, natural de Curiepa, soltera

Diagnostico Estrechez rectal a virus poradénico

Tratamiento Colostomia izquierda definitiva Técnica Cuneo modificada 4 XII 1940

Postoperatorio inmediato normal

Postoperatorio tardio ano funciona bien Continencia bien

Obs No 16 —Hospital Vargas Servicio de Cirugía No 2 Historia No 389

D P —26 años de edad, sexo femenino, natural de Margarita, soltera

Diagnóstico Estrechez rectal a virus poradenico

Tratamiento 8 XI 1939 —Ano ilíaco definitivo Técnica Cuneo modificada Anestesia general con eter

Postoperatorio inmediato normal

Postoperatorio tardío las lesiones del recto no han cicatrizado Se hizo extirpacion abdomino perineal 18 I 1940

15 VI 1941 —La enferma esta bien Muy gorda Su ano funciona bien No usa la pinza por no necesitarla pero la guarda en su bolso para caso de necesidad Ha continuado su oficio de lavandera Su vida sexual es normal

Obs No 17 —Hospital Vargas —Servicio de Cirugía No 2 —Historia No 370

M P 30 años de edad, natural de Ciudad Bolivar, sexo femenino soltera

Diagnostico Estrechez rectal a virus poradenico

Tratamiento 23 XI 1939 —Ano ilíaco definitivo Tecnica Cuneo modificada

Postoperatorio inmediato normal

Postoperatorio tardio Tres meses mas tarde se practicó una extirpación abdomino perineal del recto La enferma se encuetra en estado normal Su ano funciona bien Hay continencia necesidad de pinza

Obs No 18—Hospital Vargas Servicio de Cirugía No 2 Historia No 4146

M T —18 años de edad, raza mestiza, natural de Altagracia de Orituco, soltera

Diagnóstico Estrechez rectal a virus poradenico Ingresa a este servicio enviada de un asilo en donde está recluída por incapacidad social Hace un año le fue hecho un ano umbilical La enferma sufre de crisis diarreicas constantes, incontinencia del ano y prolapso de ambos extremos Esto lo imposibilita todo trabajo Su vida no es posible de este modo

Tratamiento Cierre extraperitoneal de ano transverso Laparatomia mediana Exploracióm Las lesiones son muy altas y se secciona el ligamento freno colico izquierdo con despegamiento del angulo esplénico del colon donde se hace la sección del colon Formación del ano iliaco definitivo

Postoperatorio inmediato normal

Postoperatorio tardío La enferma ha engordado Se ha quedado trabajando en el mismo Hospital de auxiliar de enfermera en una sala de medicina

El recto no supura La continencia es buena No han vuelto crisis diarreícas El aspecto estético de su nuevo ano y su continencia le han permitido renovar sus relaciones sexuales.

Obs No 19 —Hospital Vargas Servicio de Cirugia No 2 —Historia No 13 634

G G 26 años de edad, sexo femenino, natural de Zaraza, viuda

Diagnóstico Estrechez rectal a virus poradénico

Tratamiento Operación No 1113 2 II 41 Ano iliaco definitivo Técnica de Cuneo modificada

Postoperatorio inmediato normal

Postoperatorio tardío Ano bien La enferma lleva una vida normal

Obs No 20 —Hospital de la Cruz Roja Servicío de Cirugía del Dr Baquero Historia No 318

E F —41 anos de edad, sexo femenino, natural de Maracaibo, soltera.

Diagnóstico Estrechez rectal a virus poradénico

Tratamiento: Ano ilíaco definitivo. Técnica Cuneo modificada.

Postoperatorio inmediato: Normal.

Postoperatorio tardío: ano funciona bien.

Obs. No. 21.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero. Historia No. 505.

T. J. 28 años de edad, natural de Los Teques.

Diagnóstico: Rectitis infiltrativa estenosante a virus poradénico.

Tratamiento: Ano ilíaco definitivo.—Técnica Cuneo modificada.

Postoperatorio Inmediato: normal.

Postoperatorio tardío: 14-V-1941.—Ano funciona bien. Orificio de 2 cm. de diametro. Continencia relativa buena. Usa la pinza cuando va de fiestas. Vida sexual normal.

Obs. No. 22.—Hospital Vargas. Servicio de Cirugía No. 2.—Historia No. 189.

M.T.—34 años de edad, natural de Zaraza, sexo femenino.

Diagnóstico: Estrechez rectal a virus poradénico.

Tratamiento: 11-IV-1938. Ano ilíaco definitivo. Técnica Cuneo modificada.

Postoperatorio inmediato: normal.

Postoperatorio tardío: Seis meses después le fué practicada la extirpación del recto por via abdomino perineal. Tres meses mas tarde estaba definitivamente curada y regresó a su pueblo en estado normal.

Obs. No. 23.—Hospital Vargas. Servicio de Cirugía No. 2.—Sala 19.—Historia No. 1953.

R.B. 36 años de edad, raza blanca, natural de Ciudad Bolivar, soltera.

Diagnóstico: Ano umbilical prolapsado. Estrechez rectal a virus poradénico. La enferma acude al Servicio No. 2 porque el estado actual no le permite llevar vida social.

Tratamiento: 29-V-1940.—Cierre extraperitoneal de ano umbilical Colostomía ilíaca definitiva. Técnica Cuneo modificada.

Postoperatorio inmediato: normal. A diez días cicatrización de sus heridas. Se obtuvo el cierre del ano umbilical.

Postoperatorio tardío: 11-I-41.—La enferma regresa del interior (Barcelona) Solamente a que controlemos su ano. Se siente contenta. Su continencia es magnífica. No usa pinza sino en casos urgentes. El recto no supura.

Obs. No. 24.—Hospital de la Cruz Roja. Servicio de Cirugía del Dr. Baquero.—Historia No. 505.

T.J., 28 años de edad, raza blanca, sexo femenino, natural de Los Teques.

Diagnóstico: Estrechez rectal a virus poradénico.

Tratamiento: Colostomía definitiva continente. Técnica Cuneo modificada. 15-II-1941.

Postoperatorio inmediato: normal.

Postoperatorio tardío: Ha engordado cinco kilos. 25-III-1941. Su ano muy bien. Usa la pinza casi de continuo cuando sale a la calle. Estética muy bien. Lleva su vida social.

Obs. No. 25.—Hospital Vargas. Servicio de Cirugía No. 2. Historia No. 14646.

C.F.—27 años de edad, raza blanca, obrero, natural de Caracas, soltero.

Diagnóstico: Estrechez rectal a virus poradénico.

Tratamiento: 16-V-1941. Colostomía ilíaca definitiva. Técnica Cuneo modificada.

Postoperatorio inmediato: normal.

Postoperatorio tardío: El enfermo ha engordado seis kilos. Ha retornado a su trabajo. La continencia sin pinza es muy buena. Con su uso es definitiva.

Obs. No. 26.—Clínica González Lugo. Servicio del Dr. Baquero. Historia No. 1968.

C. de S. 38 años de edad, natural de Ciudad Bolivar, casada.

Diagnóstico: Estrechez rectal y sigmoideana a virus poradénico.

Tratamiento: Laparatomía exploradora. Existen lesiones infiltrativas en recto, sigmoide y parte del descendente. Se practica desprendimiento del ángulo esplénico y ano ilíaco definitivo continente seccionando colon en ángulo esplénico.

Postoperatorio inmediato: normal.

Postoperatorio tardío: 9-V-1941.—La enferma ha engordado 15 Kg. Ha vuelto de nuevo a sus actividades sociales. Una rectoscopia practicada demuestra todavía algunas lesiones rectales. La continencia del ano es satisfactoria sin pinza. Con el esfinter mecánico es definitiva. Este lo usa para asistir a la fiestas.

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RESUMEN

El tratamiento de un gran número de enfermos afectos de estenosis rectales a virus poradénico, a los que se les ha practicado una colostomía definitiva, me ha dado la ocasión para modificar algunas técnicas en las intervenciones de esta índole, siempre con el objeto de que los pacientes adquieran un ano continente definitivo, que les permita servirse de sus íntimas actividades funcionales.

La continencia verdadera y no la regularización de las materias fecales en los sujetos colostomisados, se habrá de intentar a todo trance si es que se quiere obtener algo tolerable en personas jóvenes, en plena actividad social. Para alcanzar esta continencia, se indican muchos procedimientos, entre otros los siguientes: *dieta*; uso del *aparato* receptor; pelota oclusiva; modificaciones del calibre del asa intestinal; paso del asa aferente al través de un músculo estriado; conducción del asa aferente por un trayecto subcutáneo mas o menos largo (método de Frank). De tales procedimientos se hace una ligera descripción con ilustraciones explicativas. Luego me ocupo de los pormenores de aquellosque utilizan un esfinter mecánico, para formar un túnel cutáneo por debajo del asa aferente, con el fin de obtener la compresion del asa intestinal exteriorizada y en consecuencia, una segura continencia.

Los métodos que utilizan el esfinter mecánico, son; Kurtzahn, Haecker, Kischner, Cuneo, etc. Este último es el que se relaciona con este trabajo, en el que hago constar las modificaciones de Corachán y del suscrito, sobre su técnica. *En dibujos esquemáticos* explico ampliamente los tiempos operatorios de la colostomía ilíaca definitiva. En párrafos siguientes, acerca de los cuidados postoperatorios, la contención del ano y la descripción del esfinter mecánico utilizado para tal fin. Termino, dejando conocer los resultados y los accidentes sin importancia en 26 enfermos colostomisados, cuyas observaciones van al final del trabajo. Igualmente hago especial mención de las críticas que pudieran dar lugar estos *métodos*, difíciles de hacerlas prosperar por no venir acordes con el concepto patogénico y las descripciones anatomopatológicas de los enfermos observados.

Me han servido de consulta para este trabajo, mas de cincuenta citas bibliográficas, los archivos del Servicio de Cirugía del suscrito en los Hospitales de la Cruz Roja y Servicio de Cirugía No. 2 y Anatomía Patológica del Hospital Vargas, todo ello en comprobación de la técnica expuesta.

RÉSUMÉ

Ayant soigné un grand nombre de malades atteint de sténose rectale consécutive à un lymphogranulome venereum chez lesquels une colostomie gauche iliaque avait été établie, l'auteur a modifié la technique de cette opération dans le but principal d'obtenir une continence efficiente.

Tout malade porteur d'une colostomie qui désire mener une vie active doit avoir une continence absolue; cela est aussi important sinon plus, qu'une régularité des selles. Pour achever ceci, beaucoup de moyens ont été employés: régime alimentaire, emploi d'un réceptacle, recours à des obturateurs, modification du calibre de l'anse intestinale interessée, insertion de l'anse intestinale à travers le muscle, implantation l'anse afférente dans un tunnel sous-cutanée. Tous ces procédés sont analysés et illustrés par Gonzalez.

L'auteur décrit ce qu'il désigne "sphincter mécanique." Ce "sphincter mécanique" obtient la continence par la compression de l'anse intestinale externe, au moyen d'un appareil compressif. L'auteur décrit la modification du procédé de Cuneo effectué par lui et Corachan. L'auteur décrit et illustre la technique de colostomie iliaque gauche et les soins post-opératoires qu'il emploie pour obtenir un anus artificiel continent. Il analyse 26 cas et répond aux differentes objections que sa méthode a soulevées.

From the Constitution of the

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Modified Barraquer Suction Cataract Operation*

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TO THOSE familiar with the problems of cataract surgery there is no doubt about the superiority of intracapsular over extracapsular methods. Clear media with no need for repeated needling operations; lower incidence of postoperative inflammatory reactions; and avoidance of the depressing period of waiting for cataracts to ripen are all well recognized advantages of intracapsular methods.

Barraquer's method of utilizing a vacuum to remove cataracts in their entirety is the only important original technic to be perfected in the past twenty years. Although many surgeons still remain ingenuously bewildered at so radical a departure from older methods, it is well within the bounds of possibility that Barraquer's suction method of total cataract extraction may become the universal method of the future.

That many general ideas regarding the Barraquer suction cataract operation have never been adequately understood and that others pertain to an earlier and now outmoded stage in the evolution of the technic is not universally recognized. It is the earnest desire of the writer to call attention to a need for revision of many of these concepts.

Although there is little disagreement as to the essential features of the suction technic, there is no unanimity in regard to the minor details and the manner of performing each maneuver. The size of the corneal incision, the type of iridectomy, the amount and manner of applying the vacuum, inversion or tumbling of the lens, the size and shape of the vacuum cup and the method of suturing the wound are all matters of individual preference among the surgeons who use the suction technic.

In the writer's technic the lower lacrimal punctum is dilated at the beginning of the operation and 1 to 2 c.c. of 1:3000 bichloride of mercury in petrolatum (White's ointment) is injected directly into the lacrymal sac. This has a twofold purpose: (1) it destroys any infectious organisms that may be lurking in the lacrimal passages; (2) it prevents the gastric upsets which frequently result from the toxic effects of excessive and rapid absorption by the nasal and pharyngeal mucosa of many of the solutions which drain through the lacrimal passages from the conjunctival sac.

Akinesis may be obtained either by the method of O'Brien or by that of Van Lint, or by a combination of both methods. Lid anesthesia is not important but it adds to the patient's comfort and may be easily attained by injecting a few c.c. of a solution of 2 per cent procaine with adrenalin into the subcutaneous tissues of the lids. Retrobulbar injection of 1.5 c.c. of the same solution produces a deep anesthesia of the entire globe and temporarily reduces the intraocular tension.

Lid control is most efficiently obtained by the method of Horner which eliminates the work of an assistant and removes one pair of hands from a crowded operative field. The sutures are placed in the lid at the beginning of the operation. A speculum is used only until the corneal section and iris incision have been made and the corneoscleral sutures have been placed according to the method a Barraquer. The speculum is then removed before delivering the lens and thenceforth the lids are controlled by the sutures weighted with small hemostats.

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*Presented at the International Assembly of the International College of Surgeons, Mexico City, August, 1941.

Barraquer's original ideas regarding the importance of an interrupted or pulsating vacuum have been discarded. In my own extensive experience with the suction technic I have been impressed with uselessness of tumbling or inverting the cataract into the anterior chamber. I have found that the contraction of the lens by the application of the suction cup, plus rotation of the lens in the plane of its equator in the patellar fossa without disturbing the vitreous, is sufficient to rupture the zonule in over 90 per cent of the operations. The cataract can then be easily delivered by slight traction with the suction end piece and gentle pressure on the cornea below.

Considering the anatomy of the eye and the physical problem involved in the direct extraction of cataract by the utilization of a pneumatic forceps, it is not surprising that vitreous loss is neither an imminent danger nor an important complication. The crystalline lens is suspended by the zonular fibres which extend from the anterior and posterior capsule of the lens in the region of the equator to the ciliary valleys and processes of the ciliary body. These zonular fibers form an open net work through which aqueous filters and also affords a direct open pathway between the retrolental space and the posterior chamber. The posterior chamber and the anterior chamber are directly continuous through the pupil. In other words, after the eyeball is opened, atmospheric pressure is transmitted directly through the pupil and the interspaces between the zonular fibers to the anterior condensation layer of the vitreous. Therefore when the vacuum cup is placed on the anterior capsule of the lens with the wound held open the vacuum is not transmitted to the vitreous. Atmospheric pressure is not removed from the anterior vitreous surface nor from the posterior surface of the lens.

The suction operation is the only intracapsular cataract technic in which the surgeon modifies and adapts certain maneuvers and a precise machine controlled force to suit the stage, type and physical condition of the cataract. In all other types of cataract operations the technic is either designed for one particular state of development or a certain type of cataract, or it is most efficient in dealing with a certain state of development or a certain type of cataract. One does not often encounter a patient with cataract in which all of the conditions considered ideal for a forceps extraction are present at the same time. The same is true of the conditions considered necessary for a satisfactory capsulotomy operation. In fact, the timeworn and evasive admonition, "Wait until your cataracts are ripe," has been so widely and extensively accepted that it is not at all unusual to see patients with glaucoma, optic atrophy and retinal vascular disease who have waited placidly, ignorantly and patiently until they became entirely blind before seeking a physician's advice about their eye troubles.

It should be generally understood that 100 per cent corrected visual acuity is obtainable in every case operated by the intracapsular suction technic without complications, providing that the parts of the visual apparatus other than the lens are normal However, since in many cases ocular structures other than the crystalline lens have undergone pathologic changes, normal visual acuity is not always to be expected Statistics regarding visual results are therefore of little value unless accompanied by extensive and modifying pathologic descriptions

Statistics from carefully kept records of a large series of suction operations show that the suction operation is highly successful permitting intracapsular extraction in over 95 per cent of the cases *in which it is attempted* Vitreous loss is not a common or serious complication

On the combined basis of complete removal of the cataract minimal complications, and best possible visual results, the conclusion is reached that the suction operation stands out among the best surgical technics for removal of cataracts

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Within the membership of the International College of Surgeons are several pioneers in the early use of film for medical and surgical teaching purposes Profiting by the observations these men have made over a period of years, the Board of Trustees of the International College of Surgeons at its recent meeting decided to use its widespread membership to further the appreciation and still further development of this method of teaching To do this, it has established the *Board of Review of Medico Surgical Films* This Board will review any surgical or medical film sent to it and will grant the use of a special trailer as a seal of approval in those instances where the standards of the Board of Review are met with The Board is at present compiling a very extensive catalog of all existing films in these fields and will place these data at the disposal of the profession as well as members and fellows of the College Members of the Board of Review will function under the Chairmanship of Dr Joseph Franklin Montague

Biological Scrotal Flaps—A New Approach

J. F. S. ESSER
MONACO

I DESIGNATE as biological flaps those which have, and retain, a pedicle containing veins, lymphatics, arteries, and nerves; and, if possible, sensory and motor sympathetic nerve elements. All such elements normally accompany the arteries, the presence of which can be ascertained by palpation.

These vascular elements must not be dissected out, but must be left *in situ* protected by a layer of connective tissue in order not to expose them and not to divide the vascular branches near the main vessels, thus avoiding clotting of the main vessels by dividing the principal stems. The pedicle is never cut through and henceforth effects new innervation and new circulation of the area, especially in cases of devitalized ulcers.

These biological pedicles should be used wherever possible in regions where main vessels are to be found, and the inclusion of skin avoided in the pedicles wherever possible or practicable, because the skin contains only capillaries which are shut off by the torsion.

Thus Dieffenbach's rule to insure the life of a flap by retaining a large skin pedicle is in error: it is not the skin tissues, but the loose subdermal structures which contain the essential vascular and neurologic elements for successful transplantation. Another rule of Dieffenbach's is also incorrect: namely, to cut any visible artery in the pedicle in order to avoid a plethora which might cause necrosis of the flap: plethora occurs only when the veins and lymphatics fail to drain the excess blood, lymph, and toxins produced by cell dissimilation.

J. S. Davis, in his book (1919), advocated Dieffenbach's principles. Recently, however, he has stated that Gersuny and Dunham have used "island flaps" (a particular kind of biological flaps which I introduced). This is incorrect. Gersuny did not use the term "island flap," neither did he suggest that the pedicle should contain the principal vessels and nerves. In the only case he reported he used a pedicle without skin and containing no main vessel or nerves. As a result, the flap became partly necrotic.

In the one case reported by Dunham the pedicle did contain a principal artery, but he did not lay down the complete set of principles of "biological flaps" as devised and described by me for general use. Dunham cut the artery by dividing the flap pedicle, whereas I have pointed out that *in biological flaps the vascular and nerve structures must never be disturbed.*

During my sojourn in the United States I was consulted concerning a 52 year old patient of Drs. Clement L. Martin and Joseph C. Schaefer, Chicago. The patient suffered from ulcers of the perineum resulting from x-ray burns. The ulcers had persisted despite attempts over a long period of years to heal them.

Histologic studies of excised portions of these ulcers showed, besides hyperplastic elements, no indications of the existence of carcinoma or tuberculous changes.

Dr. Martin, who has had wide experience as a proctologist, first at the Mayo Clinic and later at Loyola University, was first consulted. He and Dr. Schaefer used a long buttock flap with a large pedicle, fixed posteriorly to the anus, over the entire surface of the perineum after the ulcerous skin was excised. Though the operation was technically perfect, it was not successful in this case, because only biological flaps insure constant results in the case of x-ray and radium burns.

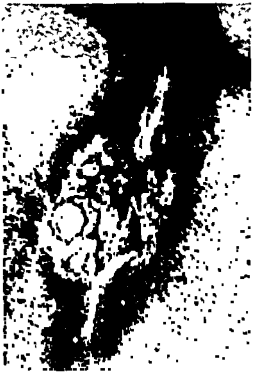

Fig. 1. The ulcers.

After the ulcerous surface on the perineal wound was excised, a biological scrotal flap was applied. (Biological scrotal flaps should be used for cases such as that described or for the rectum, passing it under the sphincter in the latter case. This conserves the anterior and lateral supply for use on the penis, thigh, and lower abdomen.) In the case described the veins and the posterior scrotal artery, being branches of the pudenda interna, and the posterior scrotal nerves were cut; some other branches of the perineal nerves and sympathetic nerve branches from the plexus pudendus were conserved. For the most part the medial hemorrhoidal nerves must be sacrificed.

The vessel and nerve elements should be carefully dissected and protected, and the incisions should be made so that only those elements that it is necessary to sacrifice will be cut.

The dorsal part of the scrotum was fixed by using metal sutures on the devitalized x-ray wound; an adhesive strip over the raphé and sacrum was the only means used to keep the skin dry. After three days the nervous patient tore off the adhesive strap, beginning this detachment from the sacrum. The scrotum had to be replaced on the wound and fixed with a new set of sutures. Naturally the prognosis was now worse, since healing *per secundum* seemed inevitable. Nevertheless, an efficient healing took place.

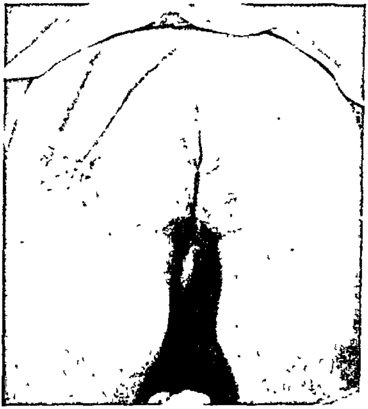

Fig. 2 The healed result

This case interested me because it proved the value of the biological flap in such desperate cases. Tissues necrosed by x-ray typically lack vitality, the capillaries are obliterated, and eventually become cancerous. These biological flaps have such vitalizing powers that they insure not only their own nourishment and drainage in cases where the wound is incapable of support, but also innervate the wound tissues, clearing them of toxins and other poisonous excretions by means of powerful drainage.

In these cases the flap is usually attached with only a few metal sutures. In cases where there is danger of contamination by body secretions (in the region of the vagina, anus, eye, nose, ear, etc.), metal sutures are most desirable, since they are moisture proof, and possess, by reason of electrolytic properties, a slightly disinfectant action. They hold firmly for a long time. Silver, bronze, aluminum, steel, copper, or brass do equally well. All other sutures which are not moisture proof cut through in the long run, even without the least tension.

As drainage along the flap continues, it gradually attaches itself to the wound and slowly revivifies the area. The sympathetic nerves may play a rôle in this process.

The pedicle of the original buttock flap, was replaced, but its useless end was purposely left posterior to the anus. This was done because it is important to maintain the patient's appreciation of his former surgical treatment, and surgery in general.

SUMMARY

The author lists the requirements of true biological flaps which he introduced into plastic surgery. A pedicle which contains veins, lymphatics, arteries, nerves and, if possible, sensory and motor sympathetic nerve elements, should be the aim. The pedicle is never cut through and continues to effect innervation of the area. He describes a case in which ulcers of the perineum resulting from x-ray burns were unsuccessfully treated by various methods, but which yielded satisfactory results (complete healing) when a biological scrotal flap was used.

COLGAJOS ESCROTALES BIÓLOGICOS

SUMARIO

El autor enumera los requisitos de los colgajos biológicos verdaderos los cuales él introduce en cirugía plástica. Un pedículo que contiene venas, linfáticos, arterias, nervios y sí es posible, elementos nerviosos sensorios y motores del simpático, lo que debe ser el proposito. El pedículo nunca se debe de cortar a travez y continua inervando el area. El describe un caso en el cual ulceras del perineo resultaron por quemaduras de rayos-x, que fueron tratadas sin resultado por varios métodos, pero que tuvo resultados satisfactorios (cicatrización completa) cuando un colgajo biológico escrotal fué usado.

RÉSUMÉ

L'auteur énumère les desiderata pour les lambeaux biologiques qu'il a introduit dans la technique de la chirurgie plastique. Le lambeau doit renfermer des veines, des lymphatiques, des artères, des nerfs et quand cela est possible, des élements moteurs et sensitifs du sympathique. Le pédicule n'est jamais coupé et continue à innerver la région. Il décrit un cas de brûlure du périnée traité sans succès par différentes méthodes mais que donna un résultat satisfaisant (guérison complète) après l'emploi d'un lambeau biologique scrotal.

United States Chapter, International College of Surgeons Meeting, Denver, Colorado, July 15-July 18. Have you made your reservations?

Embolism of The Femoral Artery—A Case Report

LYMAN WEEKS CROSSMAN, M D , F A C S , F I C S
and
VINCENT HURLEY, M D , F R C S (Eng)
NEW YORK CITY

N W , a 56 year old white female, was admitted to City Hospital, New York, on 1 28 41 complaining of shortness of breath and precordial pain of one month's duration For 8 years previous to admission she had noted precordial pain, swelling of the ankles and dyspnea on effort, these symptoms were relieved by rest until one month before admission Deafness had been present for the past seven years

Physical examination showed a poorly nourished female, looking much older than her stated age, in no apparent distress There was old bilateral chronic middle ear disease with a perforation of the left tympanic membrane, the teeth were poor There were some moist rales at the base of both lungs Examination of the heart revealed the presence of a systolic bruit which was transmitted to the left axilla, the liver edge was palpable 1 below the costal margin The peripheral arteries were markedly sclerotic, there was moderate edema of the feet and legs The temperature was 100 2°, the pulse was 76, respiration 20, the blood pressure 146 60, the Blood Wassermann was negative The blood sugar 108mg per 100 cc, the NPN was 28 The urine contained a small amount of albumin On x ray and fluoroscopy of the chest, enlargement of the heart, particularly of the left ventricle, was noted with calcification of the aorta, the E C G showed auricular fibrillation with a ventricular rate of 70 The venous pressure was 12 cm and the circulation time (Decholine) was 6 seconds

Diagnosis Arteriosclerotic heart disease with auricular fibrillation, generalized arteriosclerosis, chronic otitis media

Course The temperature ranged around 100° until the fourth day when it rose to 102 6° At this time there was some evidence of bronchopneumonia and sulfathiazol was administered On 2 5 41 (9 days after entering the hospital) the patient experienced a sudden severe pain in the right foot and calf Examination showed that the foot and lower half of the right leg were pale and cold No pulsation could be felt in the dorsalis pedis, the posterior tibial and the popliteal arteries, in the femoral artery pulsation was noted as far distally as the middle of the thigh The oscillograph showed no pulsation at the level of the ankle and the middle of the calf There was some slight oscillation just below the knee A diagnosis of embolism of the right popliteal artery was made

Papaverine was administered intravenously, the leg and foot were surrounded with uncovered ice bags and an endeavor was made to maintain a skin temperature of 15 C Heparin was given by continuous intravenous infusion and whisky was given every three hours by mouth This treatment was continued for 16 days during which time the temperature varied between 100 and 102 F The foot changed slightly in color — a slight degree of cyanosis and edema being present The lower leg however became definitely changed [illegible] and there was a suggestion marcation about the mid-calf. The patient was now apparently suffering from considerable pain; she was disoriented and very restless consequently it was decided to amputate the extremity.

The level of amputation was decided upon and three ice bags were placed around the middle of the thigh for 15 minutes. A pure gum rubber tourniquet about 1 cm. in diameter was placed on the mid-thigh and the limb from 2 inches proximal to the tourniquet packed in chopped ice. Two hours later in the operating room the ice was removed, the skin wiped, painted and draped. A skin incision was made circularly at the level of the lower margin of the patella and all the soft tissues were divided at this level. The knee joint was entered and its capsule and ligaments divided so that the leg could be removed from the field of operation. The patella was dissected out of the quadriceps tendon, being approached posteriorly.

The soft tissues were now retracted anteriorly and laterally and cleared from the shaft of the femur to a distance of two inches above the condyles. The posterior separation was done leaving the attachments of the gastrocnemius, popliteus and plantaris muscles on the lower end of the femur. The periosteum was now divided and the femur sawed through. The main vessels were found to be completely occluded. In the artery it seemed that the occlusion was due to the thrombosis which occurs distal to an embolus. The artery was slit up for a distance of 4 inches and was found completely blocked. The main vessels were transfixed and ligated. The tourniquet was now released and other bleeding points secured by transfixion ligation. The deep fascia was now approximated by a row of interrupted sutures of fine black silk: the skin was similarly closed of interrupted sutures of black silk. No drainage was used.

The postoperative course was uneventful, the patient was immediately relieved of pain and became quite rational. Healing occurred by primary union. The marked improvement in the patient's general condition has persisted to date.

Examination of the amputated limb showed that the main vessels were markedly sclerotic and thrombosed throughout. There was no frank gangrene but the tissues of the lower calf were dark and the muscles had a dark 'cooked' appearance.

Comment: Here was the typical case seen in hospital practice—a middle-aged person with heart-disease, auricular fibrillation, arterio-sclerosis and peripheral embolism. The usual course is a short period of improvement, then gangrene with intoxication and progressive deterioration. The classic dénouément is a hurried guillotine amputation under general anesthesia followed by shock, infection and death.

This case is being reported for two reasons. Firstly the method used to obtain anesthesia seems to be especially appropriate for severely handicapped patients as there appears to be a complete absence of shock. Excellent anesthesia of an hour's duration is produced so that the operation can be carried out with the deliberation and attention to detail involved in silk-technic. In the second place though the attempt to save the limb by the use of low temperature locally ended in failure it is interesting to note that gross gangrene did not develop though the main vessels were completely blocked for sixteen days. It was further noted that for fourteen days the patient complained of no pain. However it was ultimately necessary to resort to amputation, because of pain and intoxication

SUMMARY

A case of embolism of the femoral artery is reported. Though the main vessels were shown to be completely blocked throughout, gangrene did not supervene in sixteen days of local low temperature. Excellent local anesthesia was induced by the application of ice and a tourniquet for two hours.

SUMARIO

Un caso de embolismo de la arteria femoral es reportado. Aunque los vasos principales estaban ocluídos por completo, gangrena no tuvo lugar en 16 dias de temperatura local baja. Excelente anestesia fué inducida por la aplicación de hielo y un torniquete por dos horas.

RÉSUMÉ

L'auteur rapporte un cas d'embolie de l'artère fémorale. Quoique les principaux vaisseaux eussent été oblitérés la gangrène ne survint pas âprès seize jours de basse température locale. Une excellente anesthésie locale fut obtenue par l'application de glace et d'un tourniquet pour deux heures.

AMERICAN FLYING SERVICES FOUNDATION, INC.

The American Flying Services Foundation, chartered under the laws of the State of New York as a non-profit organization early in 1941, has placed many young men in the Air Corps of the Army and Navy who would otherwise, because of physical defects, never have had that opportunity.

The regular report of the Medical Division of the Foundation, covering activities for the three weeks March 16-April 4, shows that twenty-five medical, seventeen surgical, fourteen dental, and ninety-six ambulatory cases were referred to the Foundation by the Army and Navy Examining Boards. Seven of these patients were still in the hospital April 8.

These cases represent physical defects which if cleared up would permit the applicants to apply for reexamination in the Air Corps. Further figures show that twelve young men, after receiving medical, surgical and dental care by prominent physicians whose services were arranged by the Foundation, were made ready for reexamination. Eleven men were sent to hospitals for such care as was necessary; they were treated by participating physicians and surgeons.

After they had been cared for by the Medical Division of the Foundation, six applicants from the State of New York were reexamined and accepted by the Army Air Corps and four by the Navy Air Corps.

Herman De Las Casas

ONE of the most zealous and wholehearted contributors to promoting the scope and influence of the International College of Surgeons is Doctor Herman de Las Casas of Caracas, Venezuela. He has served as Honorary National President and Regent, International Vice President, Chairman of the Committee of Exchange, and Associate Editor of the Journal. From the very beginning of his affiliation, the enthusiasm which distinguishes Doctor de Las Casas in all his activities has characterized his efforts in behalf of the College.

The record of his achievements in the practice and teaching of surgery, and the contributions he has made to surgical progress, mark Doctor de Las Casas as one of the deservedly eminent men of his time.

Like a silver thread through the history of the Latin Americas runs the de Las Casas name. For centuries the family was honored in France; names of later members illuminated the scroll of Spanish history. In the New World the family was founded with the advent of two brothers who arrived with Columbus: one, Bartolomeó, became a priest so beloved that he was known as the "Father of the Indians"; the other, Mariano, settled in Venezuela to establish the de Las Casas family there.

In Caracas, in 1901, Herman de Las Casas was born. Early he manifested the brilliant gifts which were later to mark his entire career. It would seem as though the qualities that had distinguished his ancestors converged in him, endowing the lad with talents of an unusually high order.

He was sent first to a French Catholic school, and the precocity with which he mastered the texts there marked his progress through secondary schools, special courses, and the like, until he was graduated from the University of Caracas with high honors in medicine. His was the singular accomplishment of winning first place in both competitive examinations for internships in Medicine and in Surgery.

From the outset de Las Casas showed conspicuous skill in the practice of general surgery. He was first associated with Hospital Vargas and later with the Red Cross Hospital, after which he became a member of the Faculty of Paris and Resident Surgeon of the Franco-American Hospital of Berck, France. From this point in his career, promotions rapidly followed achievements:

the reach of the activities of Doctor de Las Casas broadened until he became Founder and Chief Surgeon of the Department of Traumatic and Orthopedic Surgery, Hospital Vargas, and Chief Traumatologist, Ministry of Public Works.

As a professor of physiology and surgical pathology, Doctor de Las Casas has held important posts. He founded special courses in the School of Medicine of the University of Caracas. Much of the fame of the School is directly attributable to his indefatigable labors in promoting study and research.

The numerous positions that Doctor de Las Casas has held in educational, civic and national organizations attest his humanitarianism and bespeak his intensive efforts to further those societies that advance science, tend toward general enlightenment, and promote human welfare. He has been active as a member of the Council of the Faculty of Medicine, a member of Directive Board of Hospitals, Director of School of Medicine (University), Director of Hospital Vargas, Co-founder of the Institute of Experimental Surgery, Co-founder of the Department of Anatomic Technic, Representative of the Ministry of Education of the Board of National School for Nurses, President of the Commission on Admission, Central University.

Among the posts Doctor de Las Casas is now ably filling are those of Dean of the Faculty of Medicine and Professor of Traumatology and Orthopedics of the University.

It is said also that it was de Las Casas of Venezuela who founded all that exists in orthopedic surgery in his country and it was he who started surgical cinematography there.

Doctor de Las Casas is a prolific writer and has made many valuable contributions to medical annals. His contributions to the literature of surgery are numerous. His forthcoming book, *Treatise On General Surgical Pathology* is awaited with much interest by colleagues in various parts of the world.

Those who have been fortunate enough to have come into contact with this noted leader from our neighboring country are well aware of the vitalizing personality of the man and the qualities of heart and mind that make him a valued friend and a leader in his profession. It is not overstatement to say that his achievements belong not only to our own day but also to the golden heritage of those who are to come after us.

BRAZILIAN CHAPTER

The Brazilian Chapter of the *International College of Surgeons* has been founded under the leadership of Doctors Jorge De Gouvea and Oswaldo Campos of Rio de Janeiro.

Details of officers elected, etc., will appear in the next issue.

IN MEMORIAM

MANUEL CORACHAN-GARCIA (1880-1942)

LA reacción ante las dificultades, como ante el triunfo, dá la medida de los hombres.

La juventud de Corachán fué difícil: habría amargado—o hecho abandonar la partida—a otro de menos temple. Mas tarde, el triunfo fué rotundo, sin lograr envanecerlo, ni hacerle perder su sencillez: Corachán fué un ejemplo viviente, cuya muerte constituye una pérdida para España, para Venezuela, i para el Mundo.

Nació en Valencia en 1880. Era hijo de un barbero i, no contando con medios de fortuna, hubo de abrazar la misma profesión. Pero no podía estancarse allí: los que lo conocimos no podemos imaginarnoslo sino siempre emprendiendo algo, en un perenne afán de perfección. No contaba con los medios materiales ni con la instrucción preliminar: no se arredró por esto, i trabajó de barbero a la par que hizo sus estudios. A pesar de todas las dificultades, a los 21 años recibió el grado de Licenciado en Medicina, en la Universidad de Barcelona, i poco después se doctoró en Madrid.

Los comienzos de su carrera fueron difíciles: Cataluña contaba con una pléyade de cirujanos distinguidos. Paso a paso, Corachán fué colocándose en primera fila. Sucesivamente ganó por Concurso los cargos de Adjunto en Cirujía i Jefe de Servicio, en el Hospital de la Santa Cruz de Barcelona.

En 1933, constituida la Universidad Autónoma de Cataluña por el advenimiento de la República Española, el Patronato de la Universidad coronó su carrera, eligiéndolo Profesor de Clínica Quirúrgica.

El aprecio en que lo tenían sus colegas puede juzgarse por el hecho de haber sido Presidente del Sindicato Médico Catalán i, sobre todo, por su elección para Presidente del Congreso Médico en Lengua Catalana.

Su prestigio lo llevó a funciones de gobierno. En 1936 fué Ministro de Sanidad de la Generalidad (el Gobierno Autónomo Catalán). En tal cargo, lo sorprendió la rebelión de los militares i la consecuente guerra civil, obligándolo a abandonar el País.

Estas circunstancias, tan desgraciadas en sí, constituyeron una fortuna para Venezuela. Corachán fué contratado para fundar el Instituto de Cirugía Experimental.

Realizó esta empresa de [illegible] [illegible] para [illegible] [illegible] [illegible] Cátedra de [illegible] [illegible] Escuela Médica. [illegible]

MANUEL CORACHAN-GARCIA (1880-1942)

[illegible]

Manuel Corachán-García (1880-1942)

hospital, lo que constituia para nosotros un honor, a la vez que la ocasion de aprovechar su enseñanza Pues bien, cuando se trataba de operaciones de cirujia osea Corachan—Maestro en esta como en todas las ramas de la cirujia—insistia en actuar de ayudante, sin que de nada valieran nuestros ruegos i empeño Amenudo pasaba largas horas a la cabecera de un enfermo operado por el o no, ejerciendo *funciones de simple practicante*

La Obra escrita de Corachan esta, en su mayor parte, dispersa en revistas cientificas de todas partes El resto lo constituyen sus bien conocidos tratados sobre 'Cirujija de Urgencia' i 'Cirujia Gastrica"

Desgraciadamente, la insistencia de su familia lo hizo regresar a España, donde fallecio tras violenta enfermedad

El Instituto de Cirujía Experimental, la Facultad de Medicina de Caracas i la Universidad Central de Venezuela decretaron Duelo Oficial por el Ilustre Desaparecido La primera de esas Instituciones realizara en breve un Homenaje su memoria. En a el cual se adjudicara el "Premio Corachan"

Este premio, creado por el Maestro antes de su partida de Caracas esta destinado a recompensar la mejor tesis de doctorado de indole experimental realizada en el Instituto de Cirujia Experimental Consiste en una suma de dinero, un Diploma i la publicacion del trabajo

Corachan lo instituyo por la duracion de su vida, i sera continuado por un grupo de sus amigos i discipulos

El Colegio Internacional de Cirujanos deseoso de contribuir al Homenaje a quien fue su Regente en España se propone publicar el trabajo premiado

de Las Casas

In line with the above the Board of Trustees of the International College of Surgeons, at a recent meeting has passed the following resolution

"*WHEREAS*, the saddening news has reached our shores that our loyal National Regent in Surgery Prof Manuel Corachan of the Faculty of Medicine of the University of Barcelona in Spain has met with an untimely death and

WHEREAS, it is the tradition of the International College of Surgeons to appreciate the endeavors of their co workers during their life time and remember them posthumously

'*BE IT RESOLVED* that the International College of Surgeons establish a *Manuel Corachan Memorial Oration in Surgery* to be presented at every International Assembly wherever such be held and that a committee be appointed by the International President to work out the details pertaining to such annual memorial oration'

Unanimously carried

It is with sorrow that we announce the death of our Honorary Counsel, MR MORRIS SIMON, of Washington, D C, on April 24, 1942 The condolences of The International College of Surgeons are herewith expressed to the bereaved

IN MEMORIAM

Dr Raymond Robert Westover, F I C S
Brooklyn, N Y, January 12, 1942

The President's Page

UNDER the auspices and supervision of the Toledo Guild of the United States Chapter of the International College of Surgeons, an intensive course of lectures and cadaver work on basic and surgical anatomy, gross and microscopical pathology and post mortem demonstration was provided from March 22nd to March 29th, 1942, in St. Vincent's Hospital, Toledo, Ohio, conducted under the direction of Doctors Douglass, Hohly, Ramsey and Associates.

We congratulate the Toledo Guild of the United States Chapter for this instructive and constructive course, the first of its kind inaugurated under the leadership of the Chairman of the Board of Governors, in fulfillment of the educational program and pledged activities of the College.

The members who attended this course have brought us glowing accounts of the interest, knowledge and practical help which they received. This course was attended by one member of the International College who has been doing active surgery for fifteen years, yet travelled from New Jersey to Toledo just for this course, and he appreciates keenly the practical advantages shown by the excellent demonstration and able instruction received. The course was attended by young surgeons from various parts of the country, demonstrating the interest in our plan of post graduate surgical training.

We have therefore begun our educational program with every possible facility and resource, and it is to be hoped that similar efforts will be forthcoming from all the Guilds throughout the country.

At the Council meeting of the United States Chapter and of the International College, held in New York City, March 27-28-29, a War Council was organized in order to place at the disposal of the United States Government the educational resources and activities of our organization, to the end and purpose that as a medical organization we render all possible assistance to the Government and the Armed Forces of the United States. The Surgeon Generals of the Army and Navy have been advised of our readiness and willingness to serve, and preparations are being made to organize whatever may be of most practical value to the Government in the present emergency.

Every effort is being made to enlist the interest of the official groups of the College; the National, State and Specialty Regents, the Board of Governors and Trustees.

The Journal continues to draw the interest of the profession, and inquiries for membership in the College invariably follow the publication of each number of the Journal.

The Credential Committee and Board of Examiners and Council review forty to fifty applications for membership in the College at the bimonthly meetings of the Executive Council.

Contact with the Chapters in the various countries of the Latin Americas has been maintained.

DESIDERIO ROMAN, M.D.

GUILD ACTIVITIES

POST GRADUATE STUDY GUILD UNITED STATES CHAPTER

DIRECTOR	DIRECTOR EASTERN STATES	DIRECTOR WESTERN STATES	DIRECTOR NORTHWESTERN STATES
DESIDERIO ROMAN M D	GEORGE S FOSTER M D	CHAS H ARNOLD M D	JAMES C MacGREGOR M D
250 South Seventeenth Street	925 Chestnut Street	Terminal Building	Medical Arts Building
PHILADELPHIA	MANCHESTER N H	LINCOLN NEBRASKA	GREAT FALLS MONTANA

Nebraska Guild

The fifth semi annual meeting of the Nebraska Guild was held April 16 at St Elizabeth's Hospital in Lincoln, under the general chairmanship of Dr B A Finkle The meeting was an exceptionally interesting one

The entire forenoon was given over to operative clinics Dr André Crotti, of Columbus, Past President of the International College of Surgeons, was Guest Surgeon and demonstrated goiter surgery and operative work, Dr Crotti was assisted by Dr John E Briggs, also of the Crotti Clinic Following the *demonstration, members of* the Guild *operated* in the five rooms at their disposal, in addition, there were demonstrations in the two obstetrical delivery rooms

After luncheon at the Hospital, with the Lincoln affiliates of the College as hosts, there was a round table discussion under the chairmanship of Dr F C Henry of Omaha, President of the Guild Fellows, members and associate members of the College presented to the presiding officer unsigned statements outlining briefly diagnostic and technical pitfalls, and a discussion of these followed

At 2 P M, in the auditorium of the Nurses' Home under the leadership of Dr H H Everett, the operations of the morning session were discussed in detail Dr George H Lewis, Chairman of the Dry Clinic, introduced Dr Crotti who discussed the problems presented

Drs W Andrew Bunten T F McCarthy, J J Loomis, G E Lewis K S J Holden and J W Thomas also participated

A dinner was tendered Drs Crotti and Briggs at the Cornhusker Hotel following this Dr Crotti spoke on "Some of the Latest Aspects of the Cancer Problem" Dr Chas H Arnold was toastmaster

Colorado Guild

The officers of the Colorado Post Graduate Study Guild have held several meetings during the past two months for the purpose of developing the plans for the National Assembly of the United States Chapter of the International College of Surgeons to be held in Denver, July 15 to 18, 1942 The Colorado Guild will act as hosts at that Assembly

Wyoming Guild

The officers of the Wyoming Guild are formulating plans for a meeting to be held in the very near future Details will be announced, very probably, in the next issue

Montana Guild

Plans are under way for the Spring Meeting of the Montana Guild The program will be announced within a short time

Florida Guild

The Florida Post Graduate Study Guild held a meeting on March 13, at 8 30 P M, in the Flamingo Hotel, Miami Beach Dr Fred H Albee F A C S F I C S, President of the International College of Surgeons presented a paper entitled "Hip Joint Surgery" which was illustrated by colored moving pictures and lantern slides Dr Anthony Joseph Mendillo, F A C S, F I C S, of the Board of Governors, U S Chapter of the International College of Surgeons presented a paper on "Gallbladder Surgery"

Hudson Valley Guild

The meeting of the Hudson Valley Guild of the International College of Surgeons took place in the auditorium of the Nurses' Building St Francis Hos
1942 The meeting
Dr Max M Simon,
honor

Dr Bainbridge's talk was titled "The Americas—Yesterday, Today, and Tomorrow" In a running narrative, covering from pre Inca and pre Aztec days to the present, he called attention to some of the early living habits of our neighbors to the South—the safeguarding of their teeth by the Indians the successful treating of malaria by the Pata [illegible] Indians, even before the arrival of Columbus dietary habits which provided increased iodine and calcium and decreased cooked fats and the like

Dr Bainbridge then spoke of the admirable work of the various Central and South American Chapters of the International College of Surgeons He said that the College is an ideal to be realized by cooperation of the surgeons of the world It not only sets high standards but is ever ready to lend a helping hand to those who would climb to higher things

Turning to the main theme Dr Bainbridge said that since his arrival home from his official mission for the Government, he had been most anxious that the people in the North should realize more fully the greatness of many of the institutions of learning to be found in the Republics south of the Rio Grande, their wonderful centers of research and the remark*able progress that is gradually but steadily being* made

The need for sincere continuation of our Good Neighbor Policy now, and in the peace to come, was particularly stressed Dr Bainbridge warned against careless criticism by officials and others in the va rious countries of North and South America: it is seized upon by the enemies of peaceful, friendly nations and utilized for propaganda. In a democracy individuals are permitted to speak freely, but personal opinions should never be accepted as the attitude of a government or of a people.

At the close of his talk Dr. Bainbridge said that the International College of Surgeons can be considered one of the strong links of the chain of the solidification of the Americas—a patriotic as well as a scientific call to service in our day.

Joint Meeting of the Wisconsin Chapter, International College of Surgeons, and the Milwaukee Society of Clinical Surgery

This joint meeting was held at St. Luke's Hospital, Milwaukee, March 24, 1942.

In the morning there were operative clinics in five of the Hospital rooms conducted by Doctors J. G. Garland, J. J. Gramling, W. J. Carson, J. J. Adamkiewicz, R. E. Galasinski, G. S. Flaherty, E. J. Schubert, E. P. Churchill, Robert Irwin, W. M. Kearns, J. F. Zivnuska, and L. D. Smith, and the following talks were given: The use of x-ray in localizing foreign bodies, by Dr. J. E. Habbe, The value of x-ray during operations, by Dr. H. H. Wright, The laboratory assistance in traumatic surgery, by Dr. E. L. Tharinger, The pathologist's views on appendicitis, by Dr. L. J. Van Hecke, Obstetrical surgery, by Drs. Elmer Gramling and R. W. Roethke.

Luncheon was at 1:15 at the University Club. At 2:30 the afternoon session began. The program consisted of talks by Dr. Lien Simenstad on colostomy, Dr. Karl Schlaepfer on digitalis in the treatment of wounds, and Drs. Samuel G. Higgins and Gerhard D. Straus on dysphagia.

Following dinner at the University Club Dr. Clark Brooks, Associate Professor of Surgery, Wayne University spoke on "The Acute Gallbladder."

New Instruments

MODIFICATION OF THE SMITH-PETERSEN PIN

L. V. GIBSON, M.D., F.I.C.S.
and
CHARLES H. ARNOLD, M.D., F.I.C.S.
LINCOLN, NEBRASKA

IN UNUNITED fracture it has been definitely proven that the drilling of small holes through the shaft of the bone and out through the fractured ends has been followed by union. The contention of some has been that this provides for additional circulation, while others feel that osteoblastic cells are carried in on the drill wire and deposited in the fracture space. This latter theory has appealed more strongly to us and it prompted us to apply the principle in fractures of the neck of the femur.

Consequently the well known Smith-Petersen pin is altered to accomplish this by having saw teeth cut in the flanges of the pin and these teeth "set" as a saw is "set." Thus, when the pin or nail is introduced, each "tooth" carries with it the cells from the periosteum, cortex, and the medulary canal, so that when the pin comes to rest in its proper place, miniature chip grafts are inlaid in the teeth on the three sides of the pin.

There has been no case of non-union

nor of complications in our small series of eleven cases whose ages varied from 60 to 85 years.

This procedure — which we feel is based on physiological principles — should be helpful in obtaining a larger percentage of unions where the Smith-Petersen pin is used.

BOOK REVIEWS

Operative Surgery, including Anesthesia, Pre and Postoperative Treatment Principles of Surgical Technic, Blood Transfusion and Abdominal Surgery Frederic W Bancroft Editor, xix, 1102 pp Illus (some col) $10 D Appleton Century Co, Inc, New York London, 1941

THIS is an excellent volume and should find its way to the shelves of surgeon and student alike The men who have contributed to the work are outstanding each an authority in his chosen field The illustrations are generally fine, though in the section on the surgery of the mouth, figure 1 on p 309 omits some important anatomical landmarks

The chapters on anesthesia are excellent, that by Harry J Shields being particularly so The stressing of explosion hazards in the use of the newer gasses as anesthetics as being the surgeon's responsibility is a point well taken The pharmacology of anesthetic agents has been handled in a practical and understandable manner

It would seem that the Lindeman method of blood transfusion is somewhat too old to have so much space devoted to it (pp 211 215) The section by Jean M Stevenson and Mont R Reid on fundamental principles of surgical technique is excellent, stressing as it does detailed descriptions

Section 6 on the Surgery of the Esophagus by John H Garlock is thorough and contains much worthwhile material It is to be regretted that he concludes with gastrostomy and gives Spivack credit for this operation The literature tells a different story In the first place, the tube in gastrostomy which is described in this chapter was developed by Depage[1] in 1901, and independently by Janeway in 1913 — thus Spivack had nothing to do with this part of the operation The combination principle was worked out by Watsudji[3] in 1899, therefore all the work on the principles of the operation had already been established by the time Spivack was heard from in 1929 Under these circumstances to give credit to Spivack, and ignore the pioneers who worked out the operation, is hardly just This reviewer hopes that in justice to the men who labored in enriching surgical technique this error will be corrected in forthcoming editions

There seems to be no valid reason for repeating the subject of subphrenic abscesses One finds these described both in Sections 8 and 13 under different headings Not only is the subject taken up twice, but the same drawings are reproduced

Section 20, by Anthony Bassler, dealing with diets in abdominal conditions in patients who have undergone several operations is excellent There is a *bibliography after each section except that on* jejunal ulcer by Damon B Pfeiffer and Edward M Kent (pp 647 655)

Outside of the suggested improvements which undoubtedly will be effected in future editions, this reviewer feels that this is an outstanding work full of excellent material Perusal and study of **Operative Surgery** will be of great value to the general surgeon, even to the specialist, and the volume is unreservedly recommended to all interested in surgery

M T

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[1] Depage Nouveau procede pour la gastrostomie J Chir et Annal Soc belge Chir 1 715 1901

[2] Janeway H H Eine neue Gastrostomie Methode Muench Med Wchnschr 60 1705 1913

[3] Watsudji H Eine combinierte Anwendung des Hacken und Fontan'schen Versahrens bei der Gastrostomie (Jap text) Mitt d med Gesellsch zu Tokyo 13 879 1899

Abdominal Surgery of Infancy and Childhood Wm E Ladd and Robert E Gross 455 pp 268 Illus $10 W B Saunders Co, Philadelphia and London—1941

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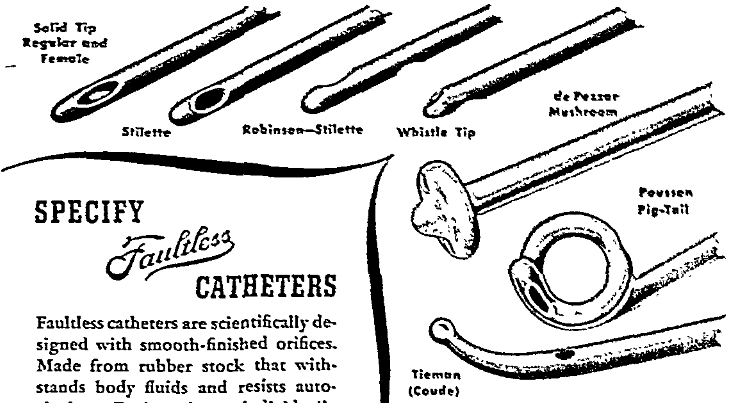

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[1] Jenkinson, E. L.: J. A. M. A. 107 755 (Sept. 5) 1936

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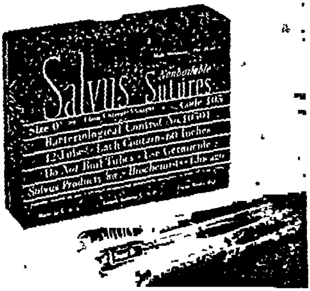
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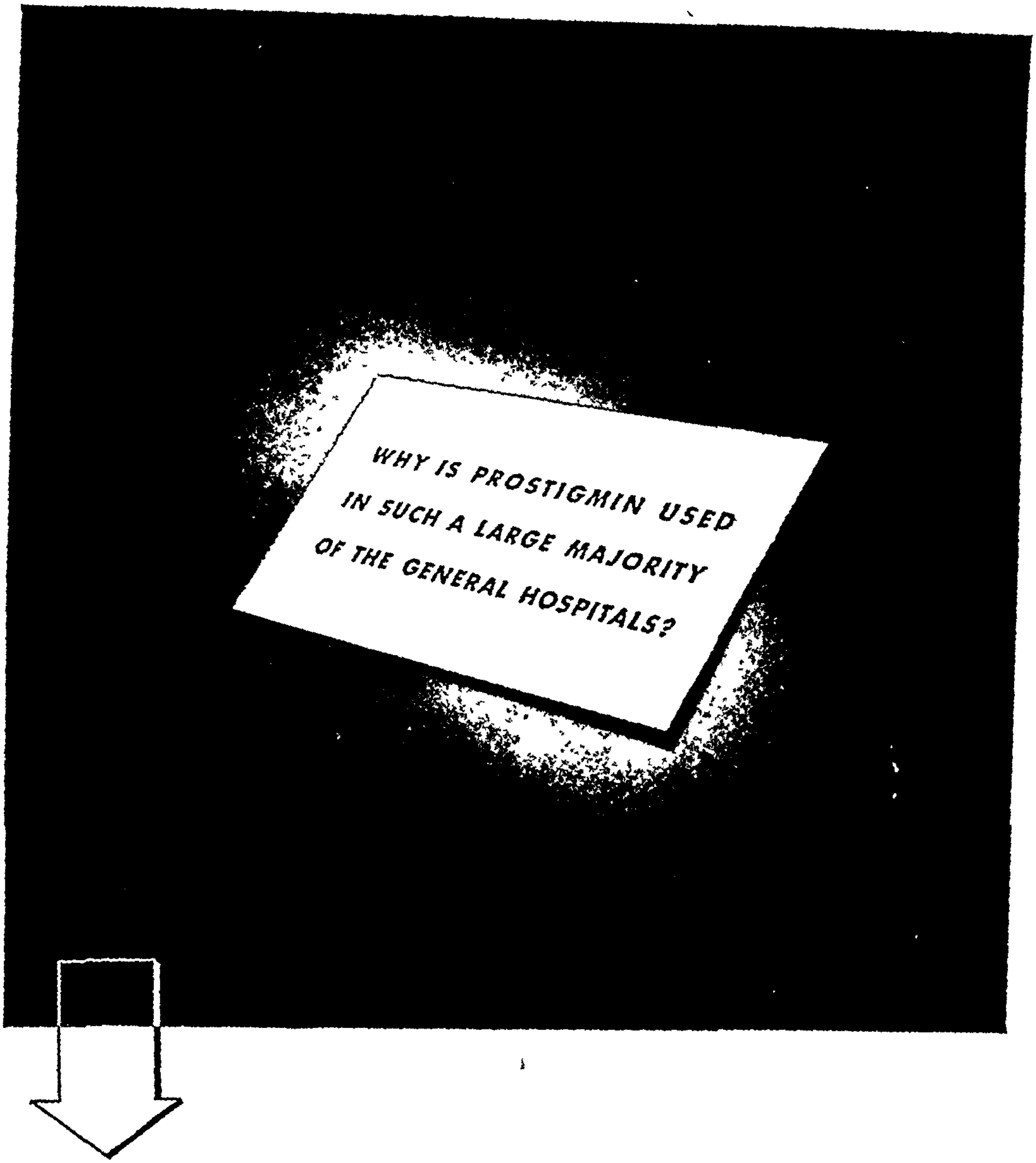

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The Journal of the
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Volume I JANUARY-FEBRUARY 1942 *Number* 1

Technical Procedures in Difficult Situations in Resections of Duodenal and Gastrojejunal Ulcers

RUDOLF NISSEN, M.D., F.I.C.S.
NEW YORK, N. Y.

INSUFFICIENCY of the duodenal stump is, in spite of technical progress in gastric surgery, one of the most frequent causes of death after gastrectomy. The danger is increased when the duodenum itself is involved in the pathological process as in ulcers of the pylorus and duodenum. In these cases it is often impossible to effect one of the typical methods of invagination of the duodenal stump. An atypical procedure is indicated. The more resection becomes the method of choice, the more the atypical procedures gain in value and importance. This is due to the fact that duodenal ulcers are much more frequent than those of the stomach.

Kelling,[1] Devine,[2] von Eiselsberg[3] and Finsterer[4] found a special way of avoiding the difficulties encountered in duodenal resections. Their method of pyloric exclusion by subtotal gastrectomy would never have gained the popularity it has today if surgeons, operating for ulcer, did not hesitate extending the resection as far as the duodenum. Although this is not the proper place to discuss all the drawbacks of the exclusion method, even with the modification of Bancroft[5] Wolfson and Br and others who extirpate the mucous membrane of the remaining pyloric part, future experience will show that the number of marginal ulcers will not differ essentially from the number of those that appear after gastroenterostomy. Finsterer[7] himself admits 4,8% postoperative marginal ulcers. Besides, in spite of that operation perforations and bleeding of the original ulcer occur.[7a] Ogilvie[8] at first a partisan of the exclusion method published his end-results in 1938. They were so disappointing that he is very frank in condemning this operation. However, as long as there was no other procedure which is quite free of danger, this mode of resection could be considered an adequate compromise.

It is surprising that the percentage of the socalled "non-resectable" ulcers varies with the various surgeons who reported on their cases.

Mandl, 1931	58% of inoperable ulcers
Jacobovici, 1932	50% of inoperable ulcers
Zuckschwerdt and Eck	19% of inoperable ulcers
Berger	8% of inoperable ulcers[9]

Still more interesting is the fact that one and the same surgeon has found that the percentage of non-resectable ulcers varies in the course of several years.

Finsterer	Previously 16,6%.....	now 6%
Flörcken	Previously 20,0%.....	now 10%[9]
Ruge	Previously 80,0%.....	now 3%

We cannot assume that that remarkable decrease of "nonresectable" ulcers may have been caused by a constant change of the patients treated for ulcer. That decrease rather leads to the conclusion that increasing experience in atypical duodenal resections has modified the conception of "non-resectability."

Although surgeons with experience in gastrectomy may have developed their own method of the atypical duodenal resection, there is still a paucity of publications on this subject.

After our first publication (1933)[10] Gohrbandt (1933),[11] Bsteh (1935),[12] Koch (1935),[13] R. Graham (1936)[14] published procedures similar to ours.

MODIFIED CLOSURE OF THE DUODENUM IN RADICAL OPERATION OF DEEP DUODENAL ULCERS

The technical principle of the method consists mainly in *extensive mobilization of the anterior wall of the duodenum.* However, if the anterior wall is contracted by cicatricial scar tissue then the method about to be described cannot be used. But to be sure real cicatricial contracture of the duodenal wall is remarkably rare; as a rule the contracture is merely a simulated one being due to peri-duodenal adhesions the sharp or blunt dissection of which is an essential part of the procedure. One is repeatedly surprised how extensively and easily the freeing of the anterior duodenal wall is possible.

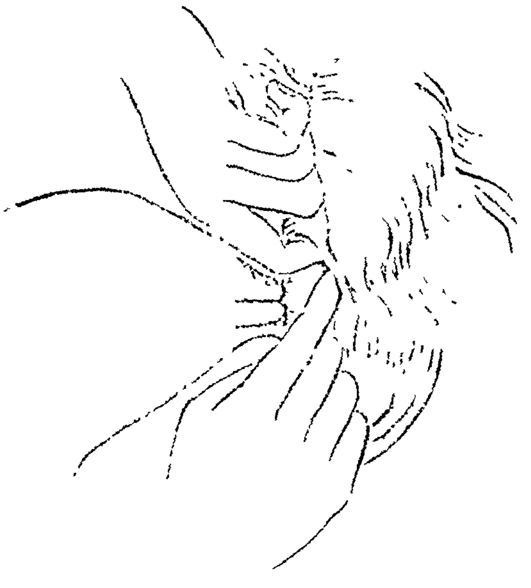

Fig. 1. Freeing the anterior wall of the duodenum from periduodenal adhesions.

The subsequent description of th operative technique is in reference t ulcers of the posterior duodenal wal which constitute by far the majority of so-called "non-resectable" ulcers.

We refrain here from any mobilization of the posterior duodenal wall because of the following reasons:

If the ulcers of the posterior wall have invaded the area of the papilla, the ductus pancreaticus or the common duct may suffer from injuries caused by that procedure. Those injuries are, of course, repairable, but that repair would involve an enormous and additional risk. Besides, after the posterior wall of the duodenum had been freed from the inflammatory adhesions, the tissue having been denuded of its serosa and deprived of its blood vessels may become necrotic

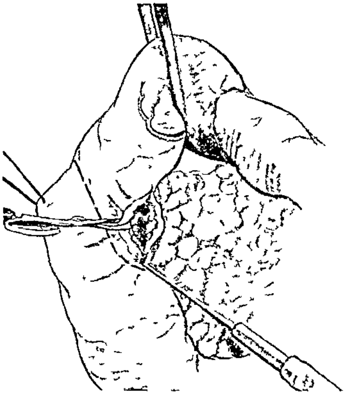

Fig 2 Exposure of the ulcer area The duodenal ulcer situated on the posterior wall has penetrated into the pancreas The duodenum is divided as outlined by the dotted line This procedure is particularly indicated in large duodenal ulcers.

Rather is the ulcer freed by the method shown in the illustrations Figs. 2 and 3. In cases of *small ulcers it is preferable* to open the anterior duodenal wall immediately below the pylorus and to incise the posterior wall from within, of course only after the pylorus has been sufficiently mobilized. To prevent escape of duodenal contents a large sponge, attached to a long string, is inserted into the duodenum.

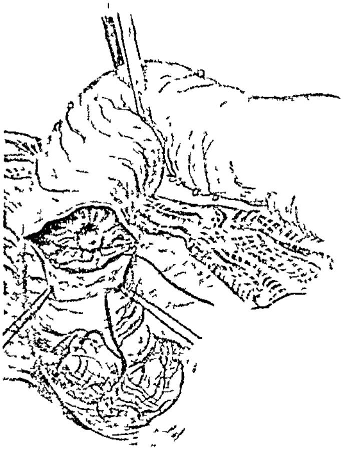

Fig 3 In small ulcers of the duodenum the anterior wall is opened first The escape of duodenal contents is prevented by a sponge introduced into the duodenum and secured by a thread as shown in the illustration The division of the posterior wall of the duodenum is carried out along the indicated line.

In cases of *large* ulcers of the posterior wall the opening of the duodenum is better made in the posterior wall. Here the dorsal wall of the crater of the ulcer is incised and from there the dissection proceeds through the remainder of the duodenal wall.

The ulcer is not excised. If large vessels are visible at the base of the crate
these are ligated.

Closure of the ulcer is achieved in th
following manner: the first line of s
tures includes the indicated duod
wall and the opposing
crater. Fig. 4 The sc

suture, again passes through anterior duodenal wall and its distal margin. Fig. 5. Since the peritoneal coat of the pancreas is usually thickened, due to chronic inflammation, it should be pulled over the anterior duodenal wall and united with omentum in a third and final covering suture. Fig. 6. It is well to determine the course of the superior pancreatico-duodenalis artery prior to the placing of this suture through the capsule of the pancreas to avoid injuring it accidentally.

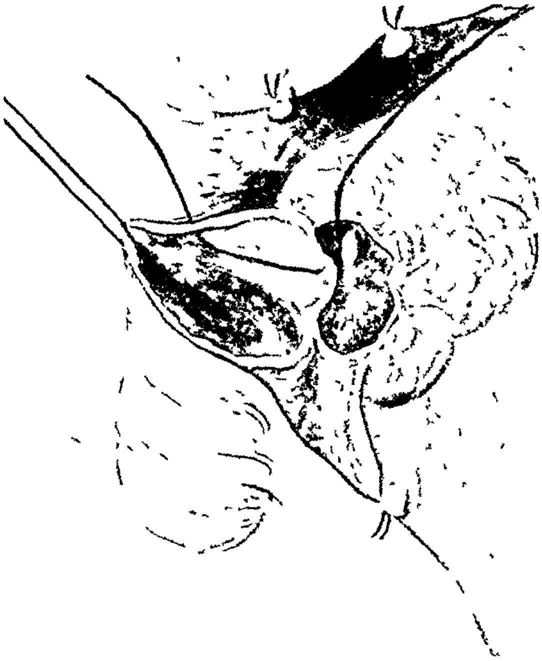
Fig. 4. Closure of the duodenum Method of introducing first suture line.

When closure has been effected in the described sequence drainage of secretion from the floor of the ulcer is not possible. Theoretically the possibility exists that an open accessory pancreatic duct evacuates its contents into the space created by suture rows one and two. In this way digestion of tissues with subsequent disintegration of the sutures might occur. It is difficult to say if the two cases of favorably terminated stump-insufficiencies which we recorded among 242 cases, can be explained on such basis. Finsterer, however, considered this exit of pancreatic secretion the cause of suture disintegration in one of his operated cases which had died of insufficiency of duodenal closure. Since then we have avoided the first suture in order to divert the pancreatic juice which might be excreted into the ulcer base and have performed only the three following rows of sutures, thus giving the secretion a free outlet into the duodenum. The omission of the first row of sutures had no ill effects.

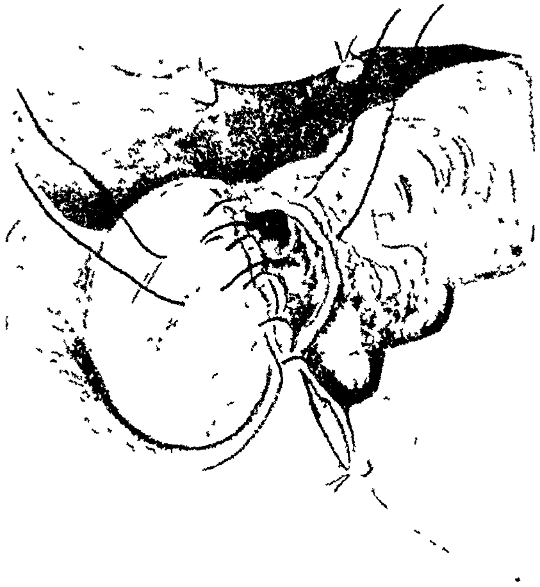
Fig. 5 Showing second suture line.

On three occasions papers were published by us regarding this technique and its various modifications, the first in 1933[15] describing 22 cases, the second in 1934[16] concerning 17 cases, the third in 1938[17] discussing 220 cases.

The operative mortality was 3.5 per cent. Insufficiency of the duodenal stump occurred twice, none ending fatally however.

A number of surgeons have used the

procedure with equally gratifying success

EMERGENCY PROCEDURE WHEN DUODENAL CLOSURE IS IMPOSSIBLE

Another technical procedure, having proved effective in 5 cases, is indicated in difficult situations which result following a duodenal resection that had not been well planned I refer specifically to those cases in which the anterior and the posterior walls of the duodenum had been excised in such a manner that neither the typical invagination nor the

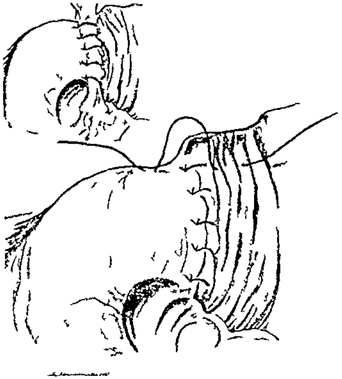

Fig 6 Third suture line reinforced by omental tabs

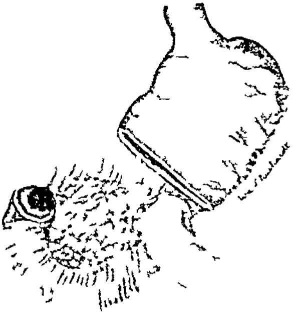

Fig 7 Appearance after resection The stump of the duodenum does not permit typical closure on account of being too short

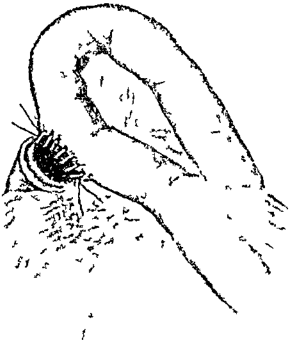

Fig 8 Approximation of a loop of jejunum to the open end of the duodenum Anastomosis The first (posterior) suture line is shown

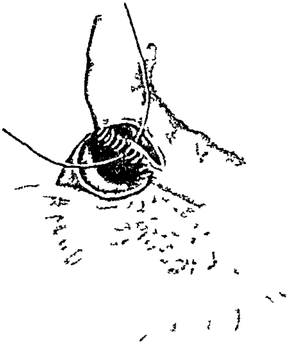

Fig 9 The second suture line (interrupted sutures) is indicated

above described atypical method could be resorted to. Fig. 7. No situation can be more embarrassing than the one in which the surgeon is confronted with a gaping lumen of the duodenum which he does not know how to close reliably.

Fig. 10. Appearance of field of operation after completion of the terminal anastomosis between the stump of the duodenum and the jejunostomy.

Though I believe that other surgeons have already used the same method, I think it will be useful to explain the procedure in detail. *It consists of a side-to-end anastomosis between the duodenal opening and the first jejunal loop.* After the jejunal loop is drawn forth, there is usually no difficulty in attaching the jejunal serosa to the pancreatic capsule which borders on the remaining stump of the posterior duodenal wall. Only a very small serosa bearing strip of the anterior wall is needed to fasten the attached jejunal wall The technique of the duodeno jejunal anastomosis is illustrated in Figs. 8, 9 and 10. A jejuno jejunostomy is carried out to avoid reflux. This completes the first stage of this procedure The second stage of the operation consists of a gastro-jejunostomy.

DIFFICULTIES OF RADICAL OPERATION FOR MARGINAL ULCER AFTER POSTERIOR RETROCOLIC GASTRO-JEJUNOSTOMY WITH A SHORT LOOP

The adequacy, or inadequacy of treating gastric ulcers by means of gastro-jejunostomy will not be discussed here. The fact remains that many text books voice the belief that posterior gastro-

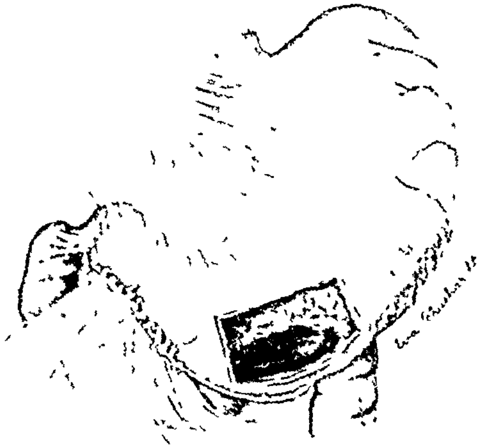

Fig. 11—Jejunal ulcer following posterior gastro enterostomy by the so called "no loop" method.

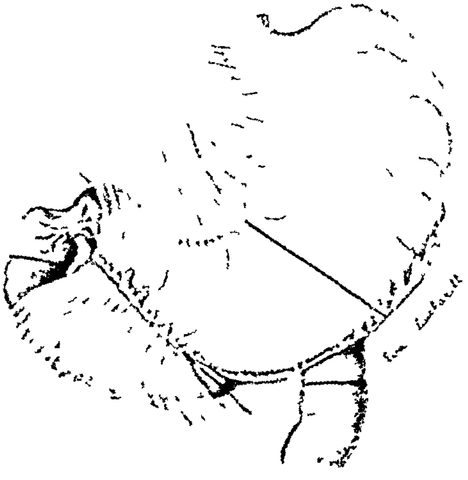

Fig. 12 Structures to be removed outlined.

jejunostomy is especially efficacious when the afferent loop is made as short as possible. Thus it happens occasionally that as a result of this advice a communication is established between stomach and the duodeno jejunal flexure Figs. 11 and 12

When under such circumstances a marginal ulcer develops, the difficulties and hazards encountered in a radical operation, the only procedure promising success, may prove extraordinarily great.

The following procedure was tried in two cases, published in 1937 in the Mémoirs de l'Académie de Chirurgie de Paris Since then a third case has been operated upon by the same method

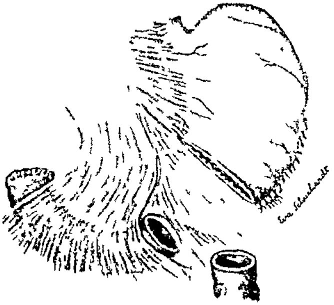

Fig 13 The resection is completed The oral end of the duodenum is closed

Following the resection of the pylorus, stomach and ulcer containing jejunal segment it was noted that a termino-terminal connection between the duodeno jejunal flexure and the other jejunal lumen was impossible because a serosa-to-serosa suture could not be effected. Fig 13. Consequently the pyloric end of the duodenum as well as the duodeno jejunal flexure were closed As a precaution the margins of the duodeno-jejunal fossa and the ligament of Treitz were sutured together. Then the other jejunal lumen was invaginated and through a slit in the mesocolon the jejunal loop was brought into contact with the anterior duodenal wall and a side-

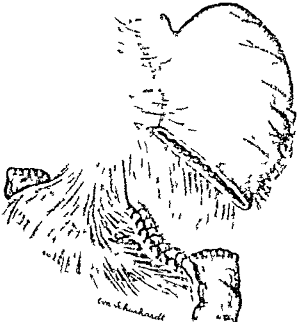

Fig 14 The aboral duodenal stump is closed The recessus duodeno jejunalis is reposited and sutured over

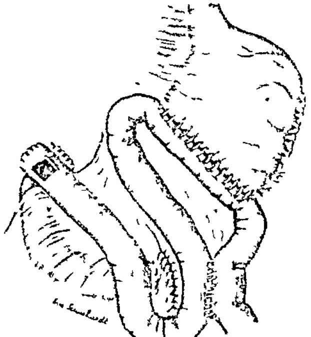

Fig 15 End to end anastomosis between aboral duodenal stump and loop of jejunum The operation is completed by gastro jejunostomy and jejuno jejunostomy

to-side anastomosis made. Figs. 14 and 15.

The operation was finished with a gastro-jejunostomy and jejuno-jejunostomy. Uneventful recovery took place in all three cases.

During the discussion of the described technique Basset explained that it would be simpler in such cases to mobilize the third, retroperitoneal portion of the duodenum and to anastomose it with the jejunum. In fact Clairmont worked out the "Mobilization of the Duodenum from the Left" for the purpose of making the lower segment of the duodenum accessible for anastomosis. Basset's objections are of a theoretical nature. Clairmont published the "Mobilization of the Duodenum" following anatomical investigation. Both overlook the fact that in cases of marginal ulcus the inflammatory infiltration extends far into the third portion of the duodenum. This can be mobilized only with damage resulting to the infiltrated duodenal wall. I do not believe that in such cases there is any other recourse than the above described procedure when one desires to proceed in a radical manner.

THE TECHNIQUE OF RADICAL OPERATION OF MARGINAL ULCERS AFTER PARTIAL GASTRECTOMY

Marginal ulcers which appear following partial gastrectomy are frequently designated as "surgically incurable ulcers." This designation is not entirely justified.

We have in our material[18] five patients with so-called "incurable ulcers." The first intervention in two cases consisted of a gastro-enterostomy, in two others resection exclusion. Only in the fifth patient was a typical resection carried out, however, more than half of the stomach was left.

It is to be assumed that these "incurable" ulcers are not primarily incurable but that insufficient surgical intervention produced an irritative condition which later made the ulcer refractory to any medical or surgical therapy.

Three of these patients had to be reresected three times, each due to recurring marginal ulcer.

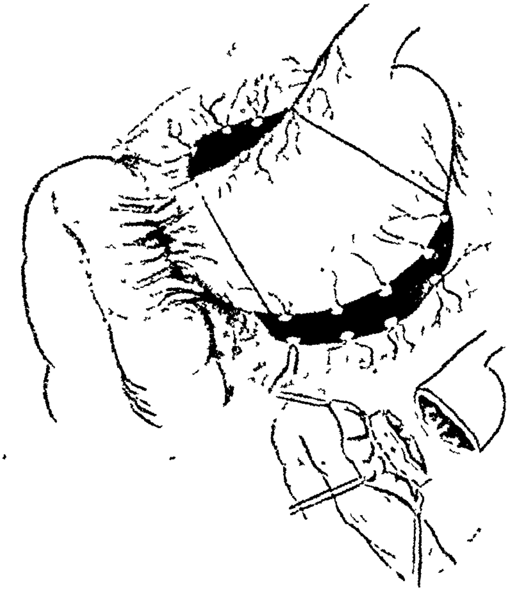

Fig. 16. (a) Jejunal ulcer following resection with perforation of the ulcer retroperitoneally. The segment of stomach to be removed is outlined. (b) Illustrates excision of the mucous membrane from the aboral portion of remaining stomach.

The difficulties encountered in subsequent resection can be very formidable especially when the ulcer has penetrated the retro-peritoneum.[19]

The following procedure was used three times. Its advantage lies in the fact that the ulcerbearing section of jejunum and stomach was not mobilized. Fig. 16.

First stage: The stomach is divided and resected, as far as possible and deemed necessary, (about three cm. cardial to the anastomosis, following ligation of the afferent vessels.)

Second stage: The mucosa is removed from that section of stomach adjacent to the anastomosis.

Third stage: The distally, transversly, sectioned stomach is closed with two rows of invaginating sutures, the omentum is included for fortification

Fourth stage: Establishment of a new gastro-jejunostomy and jejuno-jejunostomy.

This procedure is not radical, the ulcer is not resected, but since the risk to the patient is markedly reduced the operation seems sufficiently justified.

SUMMARY

1. The various difficulties confronting the surgeon while performing duodenal resections and resections for gastro-jejunal ulcers are discussed.

2. A modified procedure of closing the duodenum in the radical operation of deep-seated duodenal ulcers is described

3 An emergency procedure is described when duodenal closure seems im possible.

4 The *difficulties of radical operation* of marginal ulcer following retrocolic gastro jejunostomy with short loop and a technic of radical operation of marginal ulcers following partial gastrectomy are described and illustrated.

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SUMARIO

1. Las varias dificultades confrontando el cirujáno haciendo una resección duodenal y resección por una úlcera gastro duodenal son discutidas.

2 Un procedimiento para cerrar el duodeno en la operación radical de las úlceras duodenales de situación profunda es descrito.

3 Un procedimiento de emergencia es descrito cuando parese imposible el duodeno.

4. Las *dificultades* de la operación radical siguiendo una retrocolico-gastro-jejunostomia con asa carta y una técnica de operación radical de una úlcera marginal siguiendo a una gastrectomia parcial son descritas e ilustradas

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DUES EXEMPTION FOR THOSE ENGAGED IN ACTIVE MILITARY SERVICE

At the meeting of the United States Chapter of the International College of Surgeons held in Chicago on March 30, 1941, it was unanimously agreed by the Executive Council that Associate Members, Members and Fellows of the International College of Surgeons are exempt from payment of dues during the period of active military service

Immobilization by Surgery of Osseous and Pulmonary Tuberculosis *

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WHY surgical methods to immobilize tuberculous tissue in the lung were so much slower in being generally adopted by the profession than in the instance of the osseous system, it is difficult to explain; although it can be said that, as a research problem, the osseous system is much more favorable for the production of complete immobilization and easier to draw truthworthy conclusions from clinical observations as well as from laboratory findings. In a large number of cases, during the past thirty-five years, I have painfully observed a brilliant result obtained by a surgically induced fusion in a very advanced tuberculosis of a joint or joints come to naught because of the failure to control in the same patient an incipient pulmonary lesion.

In a paper which I presented as the opening address of the 38th French Congress of Surgeons, Paris, France, 1929,[1] in relation to osseous tuberculosis, I stated: "It is axiomatic that an advanced destructive tuberculous process in a joint can never be said to be cured except when bony ankylosis has occurred; in the absence of this ankylosis, there is never any certainty that relapses will not occur. This axiom is more applicable to tuberculosis of the spine than to articular tuberculosis elsewhere".

The problem of treatment of spinal tuberculosis and pulmonary tuberculosis have more in common than is the case with any other part of the osseous system. In each event the treatment must go on in the presence of function of respiration with its incidence of motion in spine, lungs and thorax. In the spine, as well as in the lung, it is desirable to limit the immobilizing influence to as small an area as possible, and, at the same time, allow the free motion and function of the remaining portion of the spine or lung.

This influence upon the metabolism and the general well-being of the patient is far-reaching. This is particularly so in pulmonary tuberculosis. The human organism cannot exist without sufficient respiratory function, and, therefore, it is important to immobilize only the diseased area of the lung, and thus allow the maximum amount of uninvolved lung to carry out to the utmost this very necessary function of life, namely, respiration.

Blood-vessels go with continuity of bone. The urge to repair, associated with any destructive lesion, results in the development of increased circulation. In discussions on the mechanism of healing following collapse therapy, no mention has been made of the desirability of making way for the establishment

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*Presented at the International Assembly of the International College of Surgeons, Mexico City, August, 1941.

of increased collateral blood-supply to the diseased area of the lung.

A very striking parallel exists in this respect in the healing of spinal and pulmonary tuberculosis. The establishment of increased blood-supply to the involved area is one of the important elements in permanent healing. In the instance of the spine, the bone-graft does this to a superb degree. In pulmonary tuberculosis, well executed and directed thoracoplasty results in a similar way. Following the most careful study, including a roentgenological survey of the thorax and its contents, the ribs overlying the tuberculous area should be removed subperiosteally and in such a way that they will be regenerated in a markedly depressed position, thus permanently exerting pressure upon the desired circumscribed area of the lung. Adhesions between the closely contacted thoracic wall and the diseased portion of the lung will develop. Collateral circulation will result with the physiological urge of repair. The query should be made,—whether the adhesions in this instance will not have a beneficial influence rather than the contrary; and, from this standpoint, it is apparent that the analogy in the respective discussions is quite similar, although the anatomical regions are quite different.

A patient with tuberculosis has no time to lose, and it is unwise in this dread disease to try temporizing, palliative measures, particularly since it is impossible to prognose the benignity or virulence of an individual case in advance; and again, since tuberculosis is such a chronic disease, one can never foretell, or deny the possibility of some intercurrent mishap such as a cold, pneumonia, trauma or some other acute disease, the occurrence of which may entirely upset the best calculations.

Failure to secure bony ankylosis in spinal tuberculosis eventually leads to relapse which is the rule rather than the exception. In pulmonary as in bone work, a clear understanding of the physical condition existing must be obtained by means of a careful physical, as well as x-ray examination, before the thoracoplasty is done. The portion of the ribs used to produce the collapse should be accurately placed over the cavitation and no unnecessary interference with the function of normal lung tissue should be made, which is so pointedly the case in the other types of surgical immobilization, particularly artificial pneumothorax which compresses the whole lung. A lack of permanency and the never-ending variability as to the amount of collapse or immobilization it may produce at any particular time, are the other handicaps in pneumothorax.

Plombage for the same reason does not appeal because it is a foreign body and intercepts any possibility of blood-supply developing from the thoracic wall to the pulmonary tissue in the area of its application. The catastrophe of the foreign body sloughing into the cavitation is also ever present.

Other striking analogies between the conservative treatment of spinal tuberculosis as compared with pulmonary is seen in the use of the plaster jacket. The involvement of the spinal column may be limited to two vertebrae, and still the plaster jacket must include the whole trunk, thorax and abdomen combined, both of which are very essential in maintaining the best general condition of the patient. In spite of this extensive conservative splintage interfering to such a degree with bodily function, respiration and gastro-intestinal functions, a vicious circle is permitted in that the more the disease disintegrates and collapses the involved vertebral bodies, the greater the amount of motion is allowed at that particular point and, by the same token, the more the motion the greater the disintegration.

Another analogy that is outstanding between the surgical work necessary in the case of spinal tuberculosis and pulmonary tuberculosis is that in both instances the common methods formerly were conservative and non-operative, and, therefore, it necessarily followed that men who may have been efficient in carrying out conservative treatments were unable to furnish the technical skill necessary to this most difficult surgical problem. The advancement of this type of therapy, both in joint and thoracic regions has been delayed, particularly in the case of pulmonary tuberculosis. I do not wish for a moment to claim that temporizing types of therapy do not have their place, but unfortunately, so frequently does the unexpected happen and the case becomes a virulent one, precisely as I have observed for over thirty-five years in the case of tuberculosis of the spine. Real tragedies have developed because some surgeon chose to select some palliative treatment and when the case came to me months or years later, there may have been an enormous hunch-back deformity, paralysis due to the disease extending to the spinal meninges or cord, extensive psoas abscesses, etc. If bone-graft fusion had been applied in the beginning, the story would have been quite different.

The choice of methods to attain permanent cure lies between non-operative measures and extra-articular arthrodesis (fusion). The same principle applies to the same degree in pulmonary tuberculosis. The acceptance by the profession of this principle of bringing about permanent immobilization by bone-graft surgery of the joints has been relatively rapid from the beginning and very gratifying to me. I was the first to publish my results in the case of the spine in 1911, and have continued to employ the same type of procedure since, as the sole treatment for severe joint tuberculosis.

Conservative or non-operative measures in the treatment of joint tuberculosis, include the application of casts and braces and the frame and block. The plaster cast which includes the whole trunk must be judged according to the general principles of splinting. Since both thorax and abdomen normally change their dimensions constantly, the cast cannot be fitted closely enough to maintain immobility and thus the cardinal principle of splinting must be sacrificed. It cannot be expected that any form of external splinting will immobilize a series of short bones of irregular contour to which are attached muscles acting in coordination with the muscle of respiration and the voluntary muscles which move the head and limbs. In addition to the imperfect attempts at immobilization thus made, the cast seriously restricts the movements of the thorax and abdomen and interferes with the oxidation and nutrition on which so much depends in the treatment of any form of tuberculosis. If there is an apical focus of the lung, the cast, by the same token, tends to aggravate it by constricting the lower lobes and leaving the upper relatively free, thus throwing the work on the diseased portions of the lungs.

The writer's first attempts in 1908 were directed toward fusion of the spinous processes with fragments of bone obtained locally. He was not satisfied with the ultimate results and the more he examined the principles on which the operation was based, the more faulty did they seem. The spinous processes supplied an insufficient amount of bone to anchor the vertebrae securely. Of greater fundamental importance was the consideration of the low osteogenic power of vertebral bone. It is a common surgical observation that fractures of the vertebral processes unite slowly, if at all; the progressive lysis of the vertebrae in Kummel's disease suggests that the bodies have little reparative osteogenic power, and the progression of tuberculosis in the vertebral body is not resisted by any adequate reparative osteogenesis.

These clinical findings concerning the low osteogenic potentialities of vertebral bone were confirmed by experiments in 1908 and 1909, when I transplanted cubes of vertebral bone and ulnar bone from dogs into their own erector muscles. The latter showed marked superiority in osteogenesis.

The solution of the difficulty seemed to be the application of a strong single graft from a long bone to make up for a local deficiency of bone of low osteogenic power and also because of its adequate length to influence immediate immobilization of the affected vertebrae. I chose autogenous bone for reasons which seemed then, and I am convinced still are, in accord with the soundest biological principles.

My deduction was that this graft of living bone would not provide immediate mechanical support and added osteogenic power to promote ankylosis, but also act as a vessel-conducting scaffold from each spinous process to the next and from the unaffected ones to those whose circulation is impaired from the influence of tuberculosis. The unusual success of the method is an attribute in part at least, to the linking up of the cancellous circulation in each affected vertebra with that of its neighbor, and, through the graft, with that of the healthy vertebrae adjoining the affected area. At least it is difficult to account for the phenomenal results on the basis of immobilization alone.

We operate on any patient at any age, provided the surgical risk is good. The surgical risk depends on several factors:—

1. *The General Condition of the Patient*: The question of shock in relation to different operations for tuberculosis of the spine has already been discussed. If the surgeon is skillful and rapid, he may consider the bone-graft operation if the patient is fit for any major operation.

Paraplegia, perivertebral or psoas abscess, or pulmonary disease may provide an additional indication for the operation.

High temperature due to secondary pyogenic infection is a contraindication to operation. The bacteremia must be allowed sufficient time to subside; a transfusion of blood may help. Pyrexia due solely to the tuberculosis is not a contraindication to operation.

2. *Multiple Lesions:* The presence of tuberculous foci elsewhere has often to be taken into consideration in determining operability. I have frequently observed, especially when the focus was in the kidney, testicle, epididymis or lung, that the spinal operation went on to a successful issue, although the general resistance of the patient was insufficient to prevent the progress of the second focus either to the point of destruction of the affected organ or to the necessity for its extirpation. I have observed the same favorable result after operations on monarticular joints in the face of progressive tuberculosis elsewhere. The presence of a second tuberculous focus, therefore, even if it is progressive, does not contraindicate the operation.

3. *Age of the Patient:* The bone-graft operation has been more readily accepted by the profession in adults than

in children. It has been held that, since the bones in a child are smaller and not fully developed, the operation should be postponed. My position is that immediate advantage should be taken of the safety of the operation to afford the child an aid to ankylosis. Again, traumatized cartilage usually turns to bone. The cartilaginous tips of the spinous processes in a child turns to bone when inlaid with a tibial graft. Supportive medical treatment should then be carried out just as if the operation had not been performed.

In acute progressive disease in the child, one often observes excessive hinge motion at the center of the kyphosis, accompanying respiratory movements. This indicates that the underlying vertebral bodies have disintegrated and the respiratory thrust has been transmitted to this area left without immobilizing support. A vicious circle is set up; the greater the mobility, the more rapid the destruction; and destruction increases mobility. The vertebral bodies melt away still more progressively.

It is clear that the process must be checked as soon as possible and there is no room for argument. It is clear that frames, braces or temporizing methods cannot be expected to answer such demands.

No other disease varies in virulence and in response to expectant treatment to the degree that tuberculosis does, wherever it is found. It is unfortunately impossible in the incipient stages to say whether the course will be mild and favorable or progressive, destructive and fatal; whether conservative methods will be effective, and if so, how long they will be required. I have frequently felt the profoundest regret, in operating late upon unfortunate cases, that the operation had not been undertaken long before and the patient spared years of invalidism.

So long as the prognosis remains as untrustworthy as it is, there is only one attitude to adopt toward a given case and that is to consider that it is more likely than not to be unfavorable for conservative treatment, and, to operate in every case. To be sure, a certain number of cases respond to any kind of treatment, and it is this small percentage which has encouraged some surgeons to cling tenaciously to conservative methods in all cases and to prolong them even in the face of clear evidence that the case demands more radical treatment. The following statement in reference to pulmonary disease, made by Dr. E. J. O'Brien[2] might well be made truthfully about tuberculous joint disease, particularly in the case of the spine. He states: "It is frequently inferred that the management of pulmonary tuberculosis should be less mechanical than is suggested. There are still those who would fiddle while Rome burns—with idle discussions of acute benign, benign hematogenous and other elusive phases of the disease which might not require collapse therapy, but sad and humiliating as it may be, with our present knowledge, if we wish to eliminate tuberculosis, we must be mechanics."

"It is difficult to maintain a position of conservatism which does not by watchful waiting carry us past the optimum moment for interference."

"......if expectant treatment after a reasonable period of time fails, a surgical and medical conference should determine the type of procedure which will give the individual patient his best chance of recovery."

This intrusion into the tuberculosis field by the surgeon, formerly a strict medical domain in which any surgical intervention was frowned upon, has meant the rehabilitation of a large number of patients with advanced tuberculosis, otherwise doomed to a chronic invalidism, and has been the means of converting many an otherwise hopeless consumptive into a successful conclusion. This statement is just as true in reference to the operative versus the conservative treatment in the bone and joint realm. Lest any one foster the notion that there is great conflict between the medical and surgical treatment of pulmonary tuberculosis and wastes time attempting to find out which is the more valuable, let me state here specifically that there should be no such conflict between the phthisiologist and the surgeon in the treatment of this disease. Each method has its place and very frequently it is only by a combination of the two that the desired end-results can be obtained. Neither medicine nor surgical operations alone cure tuberculosis unaided. The medical regime of prolonged intensive rest, hygienic living, good food, actino-therapy, symptomatic control, etc., properly applied, favors healing by assisting the patient to build up his bodily resistance against the disease and by reducing to a minimum any trauma or other influence which might help spread the process.

Coordinated work between the internist, roentgenologist, phthisiologist and an experienced and competent surgeon is not only desirable, but should be almost mandatory.

Many bizarre and radical procedures, such as complete excision of a knee or hip or an entire lobe of a lung for early or late lesions have been attempted in the past. The patient with osseous or pulmonary tuberculosis has no chances to throw away. He should not be deprived of any means which may contribute even slightly to his chance of recovery.

The diseased area of the lung should be reduced in volume locally and immobilized similar to that brought about by the fusion of tuberculosis knee or spine. The statement that thoracoplasty may also be substituted for pneumothorax in those patients who are gradually losing their pneumothorax, due to an adhesive pleuritis with or without repeated fluid formation, or in the migrating consumptive, where it is impossible or very inconvenient to receive satisfactory pneumothorax treatment sufficiently close to the patient's home, sounds very much like the advice given to surgically fuse a joint case by bone-graft long after conservative braceage has failed. This is particularly true in spine cases as evidenced by the x-ray showing an increased number of involved vertebrae, increased kyphosis, mediastinal abscess and even paraplegia.

The fundamental principle is to give immobilization to the tuberculous tissue wherever it may be, particularly when this tissue is normally in a state of constant motion. In the course of twenty-four hours, the thorax which includes the spine contracts and expands approximately 25,000 times.

Collapse of a circumscribed area of the lung may be obtained by interposing a substance between the pleura and the costal wall. To accomplish this, various material and devices, living and inert, have been utilized such as fat, muscle tissue, paraffin and rubber sponges and bags. Foreign bodies are always a source of danger. They may slough into the lung cavity, which is nothing less than tragedy. They may also interfere with blood-supply and further inhibit development of increased circulation to diseased areas which is always desirable in any tuberculous lesion. It should be emphasized that thoracoplasty in this respect excels all other operative procedures.

It permanently holds in contact the thoracic wall with the diseased portion of the lung in state of collapse, and this promotes ways and means for the development of a collateral circulation to the diseased area from the thoracic wall.

I wish to register disagreement with the following, for the same reason:—

"No patient is selected for thoracoplasty, of course, until an attempt has been made to control the disease with phrenicectomy, pneumothorax or the combination of both."

The same statement might be paraphrased in reference to joint involvement as follows: "No patient should be surgically fused until a failure has been determined by conservative splintage and much valued time lost."

To repeat: The patient with tuberculosis has no chances to throw away, and until the profession becomes more proficient in prognosis, the most effective and permanent treatment possible should immediately be carried out.

The following statement by McCrossin[3] is so apropo: "The amount of rib resected and the number of ribs taken at any single sitting should be determined by x-ray condition of the patient, type and extent of lung lesions, the rigidity or flexibility of the pleura and underlying tissues and the amount of collapse necessary to control the pathologic condition present, rather than by any preconceived idea of removing a certain number of ribs. Extra-pleural thoracoplasty is not arbitrarily a one, two or three-stage operation, but a remodelling of the chest wall to control underlying pathology and must be varied to meet individual needs and conditions."

The remodelled thoracic wall should hold permanently the conformation necessary to keep up a constant collapse, and pressure of the underlying diseased portion of the lung.—it is best that the ribs be removed subperiosteally with as many placques of bone from the rib clinging to the periosteum as' possible from which the new markedly depressed rib will develop. Proper splintage during the whole period of formation of this depressed rib is imperative.

The bone and joint clinic can be considered as the most satisfactory research laboratory to study these tuberculous therapeutic problems; in that bone is very satisfactory to study by x-ray and further, that motion can be completely removed from a whole joint in a way that is impossible in pulmonary disease. Ankylosis by surgery of a tuberculous joint is curative not only because it produces immobilization, but because it induces an increased blood-supply to the diseased anaemic area.

Cutler[4] states: "When adequate collapse has been obtained in properly selected cases, the results have been almost miraculous . . . ."

"The same can be said of the influence of ankylosis by surgery of a tubercular joint." (Pinner).[5] "A survey of the clinics as a whole, reveals the appalling fact that 85% of patients with cavities die within five years if treated by conservative methods alone."

"That young cavities are more amenable to mechanical treatment, particularly to the simpler methods of compression therapy is explained by the fact that sufficient time for the development of fibrotic, rigid walls has not elapsed. Obviously then, the recognition of the presence of a cavity in its early stages, followed by prompt permanent surgical collapse of this portion of the lung is most important.

Statistics have shown that in only about one-third of the cases in which artificial pneumothorax is attempted can its administration be successfully carried out, largely because of the fact that it must be maintained over a long period of time

CONCLUSION

In reviewing at this date the outstanding relative features of the treatment of pulmonary and osseous tuberculous disease, one must be struck with the unfortunate probability that in both instances these cases are likely to remain too long under the care of men not highly trained in the very difficult technic necessary to properly handle such very serious cases

The treatment of the incipient case in both fields may be started by practitioners, not skilled surgeons This status, however, is fortunately fast going out in both fields At least in the hands of the inexperienced or incompetent surgeon, procrastination is sure to follow, if not very serious delay in applying the intricate surgical methods necessary And, again, so many times when surgery is finally brought to bear upon the case, it is carried out by a clumsy, poorly trained surgeon In both of these fields the most exacting surgery is necessary

SUMMARY

Surgical methods of immobilizing tuberculous tissue have been employed in osseous tuberculosis with outstanding success for many years, but, it is only recently that surgery has become generally adopted for the treatment of pulmonary tuberculosis The same vitally important principle of immobilization of tuberculous tissue is involved in both instances

The therapeutic problems of spinal tuberculosis and pulmonary tuberculosis have more in common than is the case with any other part of the osseous system As small an area as possible should be immobilized, permitting free motion and function of the remainder

The importance of the establishment of increased blood supply to the tuberculous area in both conditions is emphasized

Temporizing, palliative measures are dangerous, due to the inability of making any accurate prognosis as to the virulence of any particular case

In reviewing at this date the outstanding relative features of the treatment of pulmonary and osseous tuberculous disease, one must be struck with the unfortunate probability that in both instances these cases are likely to remain too long under the care of men not highly trained in the very difficult technic necessary to properly handle such very serious cases

The treatment of the incipient case in both fields may be started by practitioners, not skilled surgeons This status, however, is fortunately fast going out in both fields At least in the hands of the inexperienced or incompetent surgeons, procrastination is sure to follow, if not very serious delay in applying the intricate surgical methods necessary And, again, so many times when surgery is finally brought to bear upon the case, it is carried out by a clumsy, poorly trained surgeon In both of these fields, the most exacting surgery is necessary

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SUMARIO

Metodos quirurgicos para la immobilizacion de tejidos tuberculosos han sido empleados por muchos años con em

nente éxito, aunque es solo de origen reciente que la Cirugia se emplea en el tratamiento de la Tuberculosis Pulmonar.

El mismo principio de inmobilizacion de tejidos tuberculosos incluye ambos.

Los problemas terapeuticos de la Tuberculosis de la Columna Espinal y la Tuberculosis Pulmonar tienen mas en comun que en el caso de la tuberculosis en otra parte del esqueleto. Una parte pequeña deberá ser inmobilizada, dejando libre movimiento y funcion á las partes vecindarias.

La importancia de proveer un aumento circulatorio á las regiones tuberculosas en todos los casos se hace con énfasis.

Temporizar y paliar es peligroso, debido á la dificultad de hacer un prognóstico exacto con respecto á la virulencia en cada caso. Revistando á esta fecha los aspectos prominentes del tratamiento de la Tuberculosis Pulmonar y de teji huesosos, nos vemos impresionados el echo de que con toda probabilidad ambos casos el tratamiento será proc tinado en manos de medicos insufici temente aptos en la deficil tecn necesaria en el manejo de e importante lesion.

El tratamiento de estos casos en estado incipiente, está á cargo de pra cantes y no de cirujanos especializad aunque afortunadamente en la actu dad esta tendencia esta desaparecien pues en manos de médicos ó ciruja incompetentes resulta en dilacion en empleo del tratamiento quirurgico n esario. Más aún la cirugia c frequencia es ultimamente utilizada p cirujanos de escaso conocimiento experiencia.

En la Cirugia de la Tuberculosis P monar y Huesosa la mas cuidado tecnica y experiencia es necesaria.

SPANISH ARTICLES

Since we have so many excellent papers from the Latin-American countries, it has been decided to print these articles in Spanish and give a summary in English at the head of each article.

Ed.

Tratamiento de la Pancreatitis Aguda *

(THE TREATMENT OF ACUTE PANCREATITIS)

POR LOS DRES JUAN M ALLENDE Y OSCAR L DE GOYCOECHEA
CÓRDOBA ARGENTINA

SUMMARY

Fourteen Cases of Acute Pancreatitis are presented, 7 were operated, 7 were not operated The calculous origin of the disease was evident in 10 cases Three of these 10 cases were operated on after failure of a medical regime of this series Only one patient recovered In four cases operations were performed in which error in the diagnosis was found

Of the cases not operated there were two of "pancreatic apoplexy," one of inflammatory pancreatitis, 5 patients recovered, 2 patients admitted in shock died

The authors have operated on many cases of lithiasis in which acute attacks of pancreatitis had not been diagnosed and which were admitted to the hospital with such diagnosis as pseudo cyst of the pancreas or biliary lithiasis complicated by fibrous pancreatitis

The authors submitted to medical régime every case of pancreatitis *complicating lithiasis* Only where conservative treatment fails do they resort to surgery during an acute attack Under such circumstances they limit themselves to drainage of the biliary tract

NUESTRA experiencia cuenta con numerosas observaciones de pancreatitis aguda y el proposito de esta comunicacion es exponer la conducta terapeutica que nos parece mejor justificada frente a esta enfermedad

Entre nosotros la litiasis biliar es muy frecuente y los casos de pancreatitis aguda que la complican y que nos consultan durante la crisis o mas tarde, con un pseudoquiste del páncreas lejos estan de la extremada rareza que presentan en las estadisticas de muchas grandes clinicas Waltman Walthers y W Cleveland en Mayo de 1941 publican las unicas 17 observaciones recogidas en 7 años en la Mayo Clinic

Este asunto ha merecido preferente consideración de parte de los cirujanos europeos y americanos Brocq P y Varangot J (1934) Walzel P (1929), Archibald E (1929) Gregoire y Couvelaire (1937) y mas recientemente Gray S H, Probstein J C y Heifetz Carl J (1938) publican documentados trabajos sobre el tema En 1939 Alejandro Pavlovsky lleva el asunto a la Academia de Cirugia de B Aires promoviendo un interesante debate en el que intervinieron muchos cirujanos enrolados en las dos grandes corrientes abstencionista e intervencionista

No es nuestro propósito reproducir extensamente las razones en que se apoyan los sostenedores de una u otra tendencia Recordaremos solamente que los intervencionistas afirman que con su posicion se evita el peligro de un error de diagnóstico y sus graves consecuencias, que la operacion detiene la destrucción progresiva del pancreas al drenar las vias biliares que con la escarificacion de la glandula facilitan la evacuacion hacia el exterior de principios tóxicos engendrados en el hematoma y las degeneraciones viscerales consecutivas Los abstencionistas

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*Preesnted at the International Assembly of the International College of Surgeons Mexico D F August, 1941 *abundan en razones más convincentes.* Coinciden en que toda operación agrava a éstos enfermos extraordinariamente sensibilizados por el shock; expresan que cuando los recursos puramente médicos fracasan es vano esperar la mejoría de una acción cruenta; arguyen *en fín*, que es imposible drenar el hematoma pancreático, verdadera infiltración hemorrágica intersticial en una glándula arracimada y que la derivación biliar, aún concretándose a los casos de origen litiásico es inutil, pues la operación no detiene nunca nada y sus exitos aparentes, si se logran, se deben a la epontanea limitación de la necrosis. Robustecen su posición con el argumento estadístico, de gran valor y al que nos referiremos al final de este trabajo.

Nuestra posición en principio es abstencionista pero solo la observamos cuando el diagnóstico es evidente y cuando el tratamiento médico adecuado detiene o mejora los síntomas en cuatro a seis horas de aplicación. Cuando ambas condiciones no se logran operamos toda pancreatitis aguda de origen litiásico y reducimos la operación al drenaje de las vías biliares, si es posible con anestesia local y con traumatismo mínimo.

Consideramos inútil la distinción entre pancreatitis edematosa y hemorrágica pues creemos que ambas son etapas de un mismo proceso; pero insistimos en la necesidad esencial de establecer si es de origen litiásico o no, pués únicamente aquellas podrán entrar dentro del grupo quirúrgico.

14 historias clínicas pertenecientes a enfermos de pancreatitis aguda internados en los Servicios de la I Cátedra de Clínica Quirúrgica y del Hospital Español de Córdoba forman el material documental de ésta comunicación. Seleccionamos los enfermos tratados durante el momento agudo. De los 14 casos 7 fueron operados. Tres de ellos no lograron mejoría con el tratamiento médico y debieron ser intervenidos; 4 fueron operados con diagnóstico de apendicitis o de perforación de ulcus gastro duodenal.

Caso 1.—Ficha N° 4683 A. M. 48 años: ingresó 24-IX-1933 Hospital de Clínicas—*S. 3. C. 12—A. H:* sin importancia; A. P: discreto fumador y bebedor. Obesidad desde joven. Digestiones lentas, gases, e faleas. No es constipado.—A. E. A: Dos días antes de su ingreso dolor tipo cólico hepático que mejora con reposo y láudano. Pocas horas después reaparición brusca del dolor que progresivamente se intensifica hasta adquirir particular violencia, irradiándose al hipocondrio izquierdo. Vómitos. Una inyección de morfina lo alivia. Oliguria, meteorismo, sudores fríos profusos y subictericia y coluria. Ingresa al Hospital a las 23 horas del día 24-IX, levantándose el siguiente E. A: Sujeto obeso, extremidades frías; subictericia en conjuntiva. Pulso de 120; tensión al V. L. 10/6. Temperature axilar 37°2. Lenguaseca. Acrocianosis. Respiración superficial. Abdomen meteorizado especialmente en el epigastrio (Signo de Gobie evidente). Ausencia de contractura muscular y a la palpación dolor exquisito en epigastrio y discreto en fosa ilíaca derecha. Desaparición de la matitez hepática. Timpanismo en los flancos. Douglas libre e indoloro. Se hace tratamiento con inyecciones de suero fisiológico y glucosado, insulina hielo. A las 3 horas de su ingreso agravación de los síntomas por lo que se opera con anestesia local. En el tejido subperitoneal que está infiltrado de edema y es grueso, manchas de esteatonecrosis. Al abrir el peritoneo sale abundante líquido sanguinolento y en toda la superficie serosa y especialmente en el gran epiplon manchas de bujía. El páncreas está convertido en un grueso hematoma. Se punciona la vesícula biliar que está dilatada extrayendo bilis que sale a gran tensión. Se sacan algunos cálculos. Colecistostomía. Al finalizar la operación el enfermo está en shock intenso que se acentúa, muriendo pocas horas después en coma.

Caso 2.—*Ficha 1043 M. L. de C. 40 años 9-IX-1932* Hospital Español.—A. H. sin importancia. A. P: Desde hace varios años crisis de cólicos hepáticos con ictericia y fiebre. 6 embarazos normales a término. No es constipada. Una crisis dolorosa semejante a la actual pero pasajera hace 5 años. Reumatismo crón*ico. A. E. A: 3 días antes de ingresar al Hospital*, después de almorzar fuerte dolor en el hipocondrio derecho con irradiación al dorso, vómitos alimenticios y biliosos. Un purgante es vomitado y como persisten al día siguiente los dolores consulta a un médico, quien comprueba ansiedad, vómitos, 80 pulsaciones, 36°8 temperatura, defensa en hipocondrio derecho e intenso dolor a la palpación. Diagnostica cólico hepático y aplica sedol y atropina. Los dolores calman y cesan los vómitos. Al siguiente día por la mañana la enferma se siente muy aliviada, pero por la tarde reaparece el dolor intensificándose. Nuevos vómitos; subictericia; coluria; lengua seca; ansiedad; pulso de 100; temperatura 36°5; defensa acentuada en todo el epigastrio; *meteorismo generalizado.* Parece esbozarse el signo de Gobie. Flancos sonoros. Aparato circulatorio y respiratorio normales. Oliguria. Se prescribe sedol, atropina, esparteína, alcanfor, suero fisiológico y hielo. A persar de éste tratamiento 4 horas después el estado general se agrava, el pulso se acelera a 130; hay sudoración profusa; extremidades frías; lengua muy seca. Los dolores persisten. Una ampolla de pantopón no la alivia en absoluto. Con el diagnóstico de pancreatitis aguda es internada en el Hospital el día 9/IX a las 22 horas, donde se levanta el siguiente E. A: mal estado general; pulso 140, hipotenso, extrasistólico. Marcada exitación. Lengua muy seca. Vientre globuloso, *blando, con* ligera defensa en epigastrio; sudoración profusa. Se prescriben cardiotónicos, suero glucosado a altas dosis, hielo al vientre. Dos horas después ligera mejoría, oliguria, una deposición espontánea. La noche del 9 al 10 de Setiembre es intranquila. Dosage de urea: 0,87%. Reacción de Wolghemuth fuertemente positiva En vista de la reagravacion al dia siguiente y de los resultados de laboratorio, se la opera el 10 de Setiembre a las 14 horas Anestesia local con novocaína al 0,5% Laparotomia *mediana supraumbilical muy dificultada por la excesiva* obesidad de la enferma En la cavidad peritoneal abundante exudado hemorragico y manchas de citoesteatonecrosis A través del ligamento gastrocólico se llega al páncreas que presente un aspecto equimótico Se abre la vesícula biliar extrayendo cálculos y bilis a gran tensión Colecistostomia Drenaje subhepático Post operatorio Shock intenso, subdelirio que por la noche se acentúa, coma y muerte 10 horas después de la operación

Caso 3—Ficha N° 4911 A C 30 anos Ingresó 19 X 1930, Hospital de Clínicas Sala IV cama 7 A H sin interés A P un aborto, desde hace 7 años colicos hepaticos a repetición con vómitos A E A 3 dias antes de ingresar epigastralgia intensa y vómitos que calman espontánemente para reagudizarse a las pocas horas llevando a un estado lipotímico El dolor se irradia a hipocondrio y fosa lumbar izquierdos Meteorismo Posteriormente ictericia en conjuntivas y piel Al ingresar a la guardia el dolor lumbar izquierdo es muy intenso, el ileus acentuado, el estado general grave, 120 pulsaciones Agravación 3 horas después y bajo tratamiento a base de cardiotonicos, suero, hielo y reposo El pulso es de 140, dolor exquisito en epigastrio con irradiación al hipocondrio izquierdo, meteorismo principalmente marcado en el colon transverso que se dibuja bajo la pared que no esta contracturada El resto del abdomen algo doloroso Tacto vaginal fondos de saco dolorosos Al día siguiente se levanta un nuevo E A ictericia, lengua seca, pulso de 140, meteorismo particularmente alto (signo de Gobie) y dolor exquisito en el epigastrio No hay defensa Reflejos cutaneo abdominales *abolidos Fosa lumbar izquierda dolorosa Submatidez* en los flancos Tacto fondos de saco dolorosos Oliguria intensa Glicemia 1% Reaccion de Wolghemuth francamente positiva. Operación éter Incisión paramediana derecha, líquido libre sanguinolento Manchas de esteatonecrosis Al introducir el dedo en el hiatus de Winslow viene abundante liquido fuertemente sanguinolento Vesicula y coledoco repletos de cálculos Desprendimiento coloepiploico Pancreas grueso, irregular, equimótico Se dislacera el peritoneo que recubre al páncreas Se drena la retrocavidad con un tubo y 5 mechas de gasa Colecistostomía después de extraerlos cálculos Curación de su pancreatitis

Caso 4—Ficha N° 2985 R F 45 anos—ingresó 2 VI 1932, *Hospital de Clínicas—Sala 3, Cama 28*—A H sin interés, A P Paludismo a los 14 años, blenorragia y viruela a los 19 años, tabaquismo y alcoholismo moderado A E A El día de su ingreso dolor difuso en todo el abdomen, pero más acentuado en epigastrio, haciéndose intolerable al cabo de algunas horas Vómitos alimenticios y biliosos E A pulso de 100 Temperatura 37°5 Lengua humeda Dolor exquisito en el epigastrio y fosa iliaca derecha, donde hay discreta contractura Se repiten las crisis dolorosas en número de 3 con intervalo de 6 a 8 horas, siendo sumamente agudas, con intolerancia gástrica y estado lipotímico No aparece signo de Gobie ni dolor en el hipocondrio izquierdo ni aumento en la intensidad del latido aórtico abdominal Leucocitosis 11 000, polinucleares neutrófilos 75%, linfocitos 20% Con el diagnóstico de apendicitis aguda es operado Anestesia raquídea Incisión de Mc Burney Del peritoneo sale liquido hemorrágico No se encuentran manchas de citoesteatonecrosis *Resección del apendice que está engrosado y adherido* La vesícula tensa se vacía parcialmente por suave presión Cierre de la pared Tratamiento post operatorio suero fisiológico y glucosado, insulina, cardiazol efedrina hielo en epigastrio Reacción de Wolghemuth intensamente positiva Curación a los 15 dias

Caso 5—Ficha N° 16 Hospital Espanol F E.A ingresó 27 VII 1935 Servicio del Prof R Velasco A H padre muerto a los 76 anos de apoplejia Madre muerta a los 54 años de sincope cardiaco Un hermano muerto a los 60 años por enfermedad hepática A P fumador y discreto bebedor A E A dos dias antes de operarse dolor generalizado en el abdomen, intenso, que le obligó a guardar cama Al dia siguiente se levantó para ir al trabajo pero enseguida se vio obligado a regresar con un fuerte dolor en el hipocondrio y fosa iliaca derecha, con propagación a la región lumbar del mismo lado Con el diagnóstico de apendicitis aguda ingresa al Hospital E A temperatura 36°5 Pulso 84 Tensión al V L 13/10 Abdomen meteorizado Dolor epigástrico y en fosa ilíaca derecha muy agudo Blumberg positivo Giordano presente en ambos lados, más acentuado del lado derecho Tacto rectal doloroso Operación anestesia con éter Incisión de Mc Burney Líquido hemático y algo verdoso en peritoneo Serosa despulida Resección del apéndice que está poco alterado Laparotomía supraumbilical El colon transverso y el estómago muy distendidos Se aspira el liquido libre Ausencia de perforación de estomago y duodeno Abertura de la transcavidad a través del epiplón gastrocolico y comprobación sobre la cabeza del pancreas de una masa equimótica, *negruzca La vesícula biliar está a gran tensión* Por una contra abertura para rectal derecha se exterioriza la vesicula cuyo fondo es verde claro, de *aspecto esfacelado Por puncion se extrae su contenido* verde obscuro y a gran tensión Se abre la vesicula saliendo algunos cálculos pequeños Colecistostomía Drenaje de la transcavidad con tubo y 3 mechas de gasa Se investigó amilasa en el líquido siendo negativa Colangiografia post operatoria permeabilidad del hépato colédoco Alta a los 35 días Curación

Caso 6—Ficha N° 200—J C 44 anos—Ingresó 1 II 1937 Hospital Español A E sin importancia A P fumador y bebedor moderado Blenorragia en su juventud A E A desde hace 10 años pesadez *gástrica post prandial y dispepsia electiva para los* huevos y grasas El día de su ingreso al Hospital (servicio del Prof Velasco) dolor intenso generalizado a todo el abdomen, vómitos y sudores profusos El dolor se localiza pocas horas después en el lado derecho sobre todo en la fosailíaca derecha y se acompaña de diarrea y tenesmo que cesan poco después E A temperatura 37°5 Obesidad Palides Lengua humeda 80 pulsaciones Tensión al V L 12,½/7½ Abdomen globuloso Dolor expontáneo A la palpación contractura en hemiabdomen derecho Mc Burney y Lanz positivos Blumberg presente Puntos vesicular y epigástrico muy dolorosos Operación anestesia raquídea *Incisión de Mc B*[illegible] [illegible]*o hemorrágico* libre Apendice [illegible] extirpa Laparotomía mediana duodeno sin perforación. Mesocolón transverso equimótico. Desprendimento coloepiploico Transcavidad repleta de líquido hemático. Páncreas grande e infiltrado de sangre negruzca. No hay manchas de citoesteatonecrosis. Drenaje infrahepático con tubo y mechas de gasa. Post operatório: Mejoría. A las 24 horas reagravación y muerte en Shock a las 36 horas de la operación.

Caso 7.—Ficha N° 3505—A.M. 48 años—ingresó 5-XI-1929 Hospital de Clínicas sa la 3 cama 26. A.H.: *sin importancia. A.P.: saturnismo a los 20 años.* Blenorragia a los 28 años. Bebedor y fumador. Operado de hernia inguinal. Frecuentes dolores epigástricos, sin horario, por lo que debe restringir sus comidas. Hace 1½ año presentó una crisis abdominal baja, con dolores y vómitos, que lo obligó a hacer reposo 3 días. Desde entonces se ha sentido bien. A.E.A.: hace 1 hora, estando en su trabajo habitual de jardinero siente bruscamentedolores en todo el vientre, que se agudizan y localizan preferentemente en el epigastrio, sin vómitos. *Cualquier movimien to* los intensifica. E.A.: el enfermo estando de pie, mantiene el tronco en ligera flexión y se lleva las manos al vientre. Está pálido y sudoroso. Pulso normal. Tensió arterial 11/7. Temperatura normal. Sensibililidad exquisita en el epigastrio y algo menor en fosa iliaca derecha. Macidez hepatica ausente. No parece haber líquido libre en el peritoneo. Al examen del tórax nada de particular. Con el diagnóstico probable de úlcera perforada se lo interviene de inmediato. Anestesia general con eter. Laparotomía mediana supraumbilical. Líquido claro y rosado en el peritoneo y manchas de citoesteatonecrosis. En estómago y duodeno nada de particular. Vesicula muy tensa y en el colédoco muchos cálculos. El páncreas es asien to de un hematoma. Se evacúa la vesícula y efectúa colecistostomía. Rápida mejoría. Reoperado un mes después por su fístula biliar se extraen 12 cálculos del colédoco. Se comprueba entonces que el pancreas está menos tumefacto y es duro. Colecistotomía retrógrada. *Alta a los 25 días de la* segunda intervención.

De los 7 no operados 2 murieron. 1 ingresó en estado de gravedad extrema, falleció pocas horas después; otro presentó ictericia mecánica grave, emaciación e intoxicacióñ y no se efectuó ninguna acción quirúrgica por parecer imprudente. En 2, fué evidente el diagnóstico de apoplejía del páncreas y en uno el de pancreatitis infecciosa; 2 mejoraron de la crisis aguda con el tratamiento médico y fueron más tarde operados por seudo quiste del pancreas.

Caso 8.—Ficha N° 6953—J.J.N. 21 años—ingresó 24-II 1937. Hospital de Clínicas sala 6, cama 19. A.H.: sin interés. A.P.: tabaquismo y etilismo. Niega venereas. A.E.A: desde hace 6 meses repetidas crisis de colecistitis aguda. 5 días antes de ingresar al Servicio dolor en fosa ilíaca derecha con irradiación al epigastrio y vómitos. Se hizo calmantes, dieta, reposo y hielo La crisis se repite, esta vez con dolor en epigastrio irradia do a la fosa lumbar izquierda y al hipocondrio derecho. E.A.: pulso de 140 hipotenso. Piel fria, pálida y cianótica. Temperatura axilar de 38°. Te jido adiposo y masas musculares bien desarrolladas. Aparato respiratorio normal. Pulso: 140, tensión: 10/6 al V.L. Abdomen globuloso, sin defensa. Dolor intenso en epigastrio y menor en fosa iliaca derecha. Bazo no se palpa. Hígado: se palpa y percute dentro de límites normales. Giordano positivo en el lado derecho. Leucocitosis: 14.000. Neutrófilos: 83%. Glicemia: 1,80 %; urea: 1,04 %. Wolghemuth positiva. Tratamiento: hielo, sue ro, cardiazol-efedrina. A las pocas horas muerte en schock. Autopsia: trasudado sanguinolento en peritoneo. Manchas de esteatonecrosis en el tejido celular subperitoneal. El pancreas convertido en un gran hematoma. Al corte destrucción de la glándula que aparece disociada por el infiltrado hemorrágico. Vesícula biliar repleta de pequeños cálculos. Cístico y hepato-colédoco deshabitados. Hígado, bazo y riñones macroscópicamente normales. Apéndice normal. Diagnóstico: pancreatitis aguda hemorrágical.

Caso 9.—D.D. de A.—ingresó 2-XI-1940 Hospital de Clínicas sala 4, cama 10. Edad 38 años. A.E.A.: desde hace varios años dispepsia y cólicos hepáticos, a veces con ictericia; el último ataque hace un mes. Ingresa al Hospital en estado grave, con temperatura de 39° e intensa ictericia. E.A.: dolor y contractura en el flanco derecho; depresión nerviosa profunda; el 6-XI, pocas horas antes de morir hematocrito: 48, 9%; Bil. D. 100 mgm; Bil. I. 16,4 mgm. En la necropsia *se comprobó: infarto del pulmón derecho.* Ictericia de vísceras y serosa. Grueso cálculo colesterínico enclavado en el bacinete que comprimía y obstruía el hépatocolédoco, cuya luz estaba repleta con bilis pus. Vesícula deshabitada, con bridas y divertículo. Pancreas atrófico *convertido* en una esponja de pus fétido y con gases.

Caso 10.—Ficha N° 8513—Z.L. 19 años—Ingresó 23-V-1939 Hospital de Clínicas sala 6, cama 18. A.H.: sin importancia. A.P.: eruptivas. Bronconeumonia a los 15 años. Niega venereas y específicas. A.E.A.: una semana antes de su ingreso estado febril. La víspera de su internación en el Hospital *dolor* moderado en el epigastrio que paulatinamente se intensifica hasta hacerse muy agudo, con irradición a fosa lumbar izquierda y tomando por momen tos la expresión de desgarro interno. Aumento de Volumen de la región epigástrica e ileus. Enema, purgantes y revulsión local *fracas* an. El enfermo debe permanecer inmovil, en decúbito dorsal, pues cualquier cambio de posición exhacerba sus molestias. E.A.: temperatura 38°, %. Pulso 90. Tensión 12/7 al V.L. Nada de particular en tórax. En abdomen: meteorismo particularmente acentuado en la mitad superior en donde la palpación despierta exquisito dolor y percibe latidos epigástricos. Reacción de Volghemuth positiva. Glicemia: 1,20 %. Leucocitosis: 20.000. Neutrófilos: 85 %. Se lo pone a dieta hídrica, hielo en el epigastrio y administra suero *fisiológico*, glucosado, insulina, morfina. Con este tratamiento mejora desapareciendo la fiebre a las 48 horas, cediendo el íleus, el dolor y normalizándose el pulso. Al 8° día de su ingreso el estado general es muy bueno, el pulso de 80, la tensión de 12/7. En abdomen pequeño tumor epigástrico que trasmite las pulsaciones de la aorta, del tamaño de una mandarina, renitente y *fijo* y que desaparece con las contracciónes de lo músculos rectos. Alta a los 22 días curado.

Caso 11 —Ficha 9330—S V de T 51 años—Ingresó 5 VIII 1940 Hospital de Clínicas sala 4 cama 31 A H sin importancia A P eruptivas En menopausia, no embarazo nunca Alimentacion mixta, constipación A E A encontrándose completamente sana, la noche víspera de su ingreso es despertada por un intenso y brusco dolor ''en puñalada'' que se localiza en el epigastrio e irradia a fosa lumbar izquierda La enferma tiene la sensacion de ser ''atravesada'' desde el epigastrio hasta la columna vertebral El dolor es continuó y tan intenso que la lleva a un estado lipotimico Vomitos abundantes La morfina no la alivia E A Al ingresar, 24 horas despues de iniciada su enfermedad, presenta facie con expresion dolorosa, disnea, temperatura axilar de 38° y rectal de 39°, pulso de 110 con tensión 13/8 al V L Abdomen meteorizado y contracturado en epigastrio a este nivel los rectos mayores del abdomen se palpan como cuerdas tensas Duele poco la fosa iliaca derecha mucho menos que el epigastrio La maniobra de percutir a nivel de la vesícula biliar no despierta dolor intenso Submatidez en los flancos Al tacto los fondos de saco estan libres e indoloros Maniobra de Giordano negativa A las 2 horas de instituirse el tratamiento médico (insulina, suero, cardiazol efedrina y hielo) la enferma reacciona favorablemente Una radiografia directa de abdomen prueba ausencia de neumoperitoneo y después de la ingestion de citobario, la radioscopia demuestra que el estómago y duodeno son normales Reacción de Volghemuth intensamente positiva Leucocitosis 15 000 Neutrófilos 78 % Glicemia 1 % A los 10 días de su ingreso la enferma abandona el Servicio muy mejorada

Caso 12 —F G 35 años—Ingresó 17 VII 1941 Hospital Español (Servicio del Prof Velasco) A H padres y hermanos sanos uno fallecido de bocio A P eruptivas blenorragia cólico nefrítico izquierdo sin hematuria a los 33 años Regurgitaciones ácidas y pirosis Muy fumador A E A el día del ingreso a las 19 horas es visto por un médico Desde la tarde anterior intensa epigastralgia sensación de desgarramiento con profusos sudores fríos Se hace hielo, reposo y laudano Hay intolerancia gástrica Al examen intensa defensa epigástrica Se sospecha perforacion de un ulcus gástrico por lo que ingresa al hospital E A Facie doliente Pulso 90, temperatura 36°,8, tensión 125/80 Abdomen excursión respiratoria presente Intenso meteorismo en su mitad superior Dolor y defensa en tabla en la zona epigástrica el resto del abdomen es facilmente depresible aunque doloroso El dolor epigástrico es intenso a la palpación por debajo del reborde costal izquierdo Giordano doloroso en el lado izquierdo Punto costo muscular del mismo lado positivo (signo de Mayo Robson) Radioscópicamente se comprueba la ausencia de neumoperitoneo Se coloca al enfermo en reposo, administrándole suero salado hipertónico suero fisiológico cardiazol efedrina y hielo en epigastrio El enfermo mejora Reacción de Wolghemuth positiva al 4° dia ésta se hace negativa El signo de Erkenaun (distensión del duodeno en forma de herradura) es positivo Se insiste en la medicación Eritrosedimentación I 50mm II 81 mm Leucocitosis 10 200 Neutrófilos 86 % Se continua con el mismo tratamiento En la actualidad muy mejorado

Caso 13 —Ficha N° 5724—A S de L 43 años—Ingresó 4 III 1935 Hospital, de Clínicas sala 4 cama 6 A H sin interés A P tifoidea pleuresía Artritis Menopausia Constipacion A.E A hace 6 meses cólicos hepaticos sin ictericia 5 días antes de ingresar epigastralgia con irradiación a fosa lumbar izquierda E A subictericia Pulso de 120 Tension arterial 125/85 Temperatura 37°,5 Dolor exquisito en epigastrio Latido aortico exagerado Giordano positivo en el lado izquierdo Punto costo muscular sensible del mismo lado Meteorisme generalizado, mayor en la mitad superior del abdomen Reacción de Wolghemuth positiva Con tratamiento médico mejoria En los dias subsiguientes aparición de un tumor quistico, tenso, mate a la percusion y fijo Pasado el accidente agudo con anestesia local, tratamiento del seudoquiste que contiene 3 litros de liquido sanguinolento y colecistectomía ulterior

Caso 14 —Ficha N° 4968—E B 56 años—Ingreso 20 II 1924 Hospital de Clinicas, sala 6, cama 3 A P chancro y blenorragia Operado a los 27 anos por peritonitis apendicular Hizo tratamiento antiluético prolongado A E A 20 días antes de ingresar al Servicio dolor intenso epigástrico que se irradia a todo el abdomen Expontaneamente se alivia 3 dias después otra crisis semejante, acompañada de vomitos alimenticios y biliosos y 14 dias antes de consultar, nuevo ataque mas intenso aún con dolor epigástrico que se irradia a fosa lumbar izquierda y estado lipotimico Ingrsa al Hospital en donde se levanta el siguiente E A subictericia Anisocoria Reflejos pupilares normales Pulsp de 90 Tensión arterial 12/7 Abdomen globuloso Dolor exquisito en epigastrio Puñopercusion y punto costo muscular izquierdo dolorosos Flancos libres Reacción de Wolghemuth positiva Leucocitosis de 18 000 Neutrófilos 78% Se instituye tratamiento médico Mejoría, pero aparición en epigastrio de un tumor progresivamente creciente, quistico que se diagnostica como un seudoquiste del pancreas Se opera evacuándose 2, 5 ls de liquido sanguinolento Marsupialización

COMENTARIO

Esta comunicación se refiere a 14 casos de pancreatitis aguda tratados en el Servicio de la I Cátedra de Clínica Quirúrgica y en nuestro Servicio del Hospital Español de Córdoba

De los 14 casos, 7 fueron operados y 7 tratados médicamente A 4 enfermos se intervino con diagnóstico equivocado, de apendicitis aguda 3 y 1 de ulcus perforado En 3 de estos casos la pancreatitis era de origen litiasico y en 1 (enfermo N°4) la exploración palpatoria de la vesícula reveló la ausencia de cálculos y los antecedentes por su parte descartaron la litiasis El Cirujano evacuó y drenó la vesícula en los 3 primeros, en el último concretó su operación a una simple apendicectomía, mejorando el enfermo rápidamente de la pancreatitis con el tratamiento médico postoperatorio El error de diag nóstico es muy posible, cuando no se piensa en esta enfermedad ante un abdomen agudo. El caso N° 12 carecía de antecedentes patológicos biliares y gástricos. Inició bruscamente un sindrome abdominal agudo con intenso dolor epigástrico y contractura en tabla de la pared abdominal. La ausencia del neumoperitoneo y la irradiación izquierda del dolor llevaron al diagnóstico probable de "*apoplejía del pancreas,*" *confirmada al día siguiente por la reacción de Wolghemuth* fuertemente positiva.

3 enfermos fueron operados después del fracaso del tratamiento medico y de establecer que se trataba de litiásicos biliares. La prueba *terapéutica tiene para nosotros particular* significado pronóstico, pues es ineficaz comunmente en aquellos casos con lesiones muy extendidas, con destrucciones masivas del pancreas y degeneraciones viscerales irreversibles. En general muy pocas esperanzas pueden cifrarse en la operación cuando los recursos médicos carecen de eficacia. Los 2 primeros casos murieron en las primeras horas del postoperatorio y en ambos existía destrucción masiva del pancreas y acentuada gravedad en el momento de su ingreso. El caso N° 3 en cambio respondió bien al drenaje biliar. En resumen: 6, de los 7 opera dos hicieron la pancreatitis como complicación de la litiasis biliar y en todos la intervención quirúrgica comprobó un estasis canalicular. El drenaje se efectuó practicando una colecistostomía con anestesia local en la mayoría de ellos. En el caso N° 4 no se actuó sobre las vías biliares al establecerse la ausencia de estasis vesicular por la presión suave ejercida sobre el colecisto a través de la incisión de McBurney. En 7 de los enfermos aquí comentados se observó abstencionismo. En 2 casos, los N° 11 y 12 se diagnosticó apoplejía de pancreas; en otro, el N° 10, setrató de pancreatitis infecciosa. Los 3 curaron con tratamiento médico. Los enfermos 13 y 14, con pancreatitis de origen litiasica, mejoraron con tratamiento médico pero presentaron como secuela un seudo quiste que fué intervenido conjuntamente con su litiasis biliar; finalmente, los casos 8 y 9, murieron sin operación. El enfermo 8 ingresó en tal estado de gravedad que el fallecimiento se produjo a las pocas horas, sin reaccionar en absoluto al tratamiento antishock que immediatamente le fué *instituido; y el caso 9 se presentó* en el curso de una ictericia grave, en una *enferma emaciada y debilitada, en quien toda* acción cruenta no hubiera sino precipitado la muerte.

Si a los casos de pancreatitis aguda de origen litiásico sumamos los enfermos con seudoquistes del pancreas o *pancreatitis crónica* de origen biliar, no diagnosticadas en el momento agudo y que más tarde fueron intervenidas por la complicación, o simplemente por la litiasis biliar originaria, se concluirá en que el procentaje de los que salvan la etapa aguda supera en mucho al de los que mejoraron después del drenaje quirúrigo de las vías biliares. Esta es nuestra experiencia y concuerda con los resultados obtenidos por Walzel de Viena, Nordmann de Berlín y Von Haberer de Colonia. Algunas estadísticas consignan resultados con el abstencionismo, acusando éxitos realmente extraordinarios. Elliason y North tienen 0% *de mortalidad;* Smeal 7,5%; Nordmann 22% y Mikpelson 7,5%. Nosotros creemos que el abstencionismo conducido con, el criterio expuesto anteriormente, constituye la mejor conducta terapéutica *frente a un enfermo con pancreatitis* aguda.

RESUMEN

14 casos de pancreatitis aguda son comentados en este trabajo: 7 fueron operados y 7 no intervenidos.

El origen litiásico de la enfermedad fué evidente en 10 casos.

3 de los 10 enfermos con pancreatitis por litiasis biliar fueron intervenidos ante el fracaso del tratamiento médico y solo 1 curó. 4 de los operados 10 fueron por error de diagnóstico.

De los no intervenidos 2 padecieron apoplejía del pancreas y 1 pancreatitis inflamatoria. 5 curaron y 2, que ingresaron en grave schock, murieron.

Hemos operado muchos enfermos litiásicos que pasaron su crisis aguda de pancreatitis sin diagnóstico y que vinieron al Hospital por un seudoquiste o simplemente por una litiasis complicada de pancreatitis crónica fibrosa.

Toda pancreatitis aguda que complica una litiasis biliar la sometemos a tratamiento médico, y sólo si este fracasa la operamos durante la crisis. Nos limitamos entonces al drenaje quirúrgico de las vías biliares.

En la mayoría de los enfermos, pasada la complicación, tratamos operatoriamente la litiasis.

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The Scalenus Anticus Syndrome

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And
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PHILADELPHIA, PA.

NAFFZINGER, in 1938 pointed out the fact that compression of the subclavian artery could be caused by a tightened anterior scalenus muscle; and that this in turn, could cause pain in the shoulder radiating into the arm and hand. Since then, confirmatory findings have been reported by others. Ochsner, Gage and deBakey published a report of several patients who were successfully treated by section of the muscle. Other observers have confirmed these findings.

Being familiar with the anatomy in this area is essential to an understanding of the symptomatology. The scalenus muscle is attached to the anterior tubercles of the transverse processes of the 3rd, 4th, 5th and 6th cervical vertebrae. From here it courses almost directly downward to be inserted at the scalene tubercle, on the upper inner surface of the first rib. At this point it lies behind the subclavian vein and in front of the subclavian artery and brachial plexus. The components of the brachial plexus lie directly behind the medial surface of the muscle as they emerge from their respective foramina. Occasionally, a slip of muscle passes behind the artery, this forming an inverted "V" of muscle over the artery with the rib at the base. The sympathetics lie closely adjacent to the medial surface of the anterior scalenus muscle.

A painful syndrome may be produced by spasm or hypertrophy of this muscle. When this occurs, pressure may be exerted upon the subclavian artery and brachial plexus and sympathetic fibers; either by direct pressure or by indirect pressure caused by elevation of the first rib. It is also possible that pressure may effect the subclavian vein.

Symptoms of this syndrome may vary from a mild burning sensation in the shoulder, arm and finger, to pain of excruciating intensity. Motion is not limited. The pain itself may follow the distribution of the lateral, medial and posterior cords, or the entire plexus may be involved. Not uncommonly pain in the distribution of D2, D3, and even D4 may be associated with the syndrome.

As a result of the compression factors, changes in the surface temperature of the arm and hand may often be exhibited. Temperature may be decreased, or even increased where the obstruction to the venous return exists.

The syndrome may coexist with other lesions about the shoulder joint, such as subdeltoid bursitis. It may be traumatic or non-traumatic. Drooping shoulders or other postural deformities may be considered a form of chronic trauma.

Gage introduced injection of the scalenus muscle with procaine solution as a diagnostic test. However, in our short series, there have been patients who obtained complete relief of pain by infiltration and no relief by section of the muscle.

In reporting upon procainization of the scalenus anticus muscle, observers state that in numerous patients they had obtained a Horner's syndrome. Although it is true that through the scalenus mechanism, there may be irritation of the sympathetics, it is a secondary effect, and infiltration of the muscle with procaine which results in a Horner's syndrome with relief of pain, should not be considered evidence that the muscle is at fault. Sympathetic anesthesia appears to be an undesirable effect. Blocking of the cervical sympathetic chain is capable of relieving pain other than that which is scalenus anticus in origin. Another important fact is that infiltration resulting in a Horner's syndrome produces an effect which is not duplicated by section of the muscle.

To obtain a proper evaluation of this syndrome, we feel that the infiltration should be limited to the boundaries of the muscle, and that when a Horner's syndrome is obtained, operation should be deferred until successful muscle infiltration without the sympathetic effect has been obtained.

Nine of our patients obtained complete relief from pain following injection of the scalenus anticus muscle with procaine solution. No Horner's syndrome had been obtained in these cases. All obtained excellent results following section of the muscle.

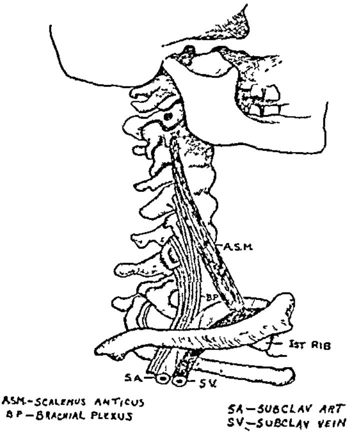
In three consecutive cases, failures followed cutting of the anterior scalenus muscle after complete relief was obtained by infiltration with procaine solution. All three had developed a Horner's syndrome with the injections. One of these patients had a bilateral section. She had developed a sympathetic anesthesia on each side, following infiltration.

A patient who was injected twice with procaine, developed a Horner's syndrome on one occasion, and none on the other, obtaining complete relief in both instances. Section of the muscle was followed by complete relief of pain.

In another case, the muscle was infiltrated with little relief of pain. After a fifteen minute waiting period, we deliberately introduced a longer needle and produced a Horner's syndrome with immediate disappearance of all pain. Needless to say, this muscle was not cut.

Concerning those patients who became pain-free following section of the muscle, and who had prior to operation developed a Horner's syndrome after infiltration, we feel that infiltration of the muscle alone would have yielded the same results. They certainly did not develop a sympathetic anesthesia after the muscle was cut.

Modification of our technique and disregarding relief of pain in the presence of a Horner's syndrome gave us highly satisfactory results. Seven consecutive



Diagrammatic Representation of Structures Involved in Scalenus Anticus Sy [illegible]

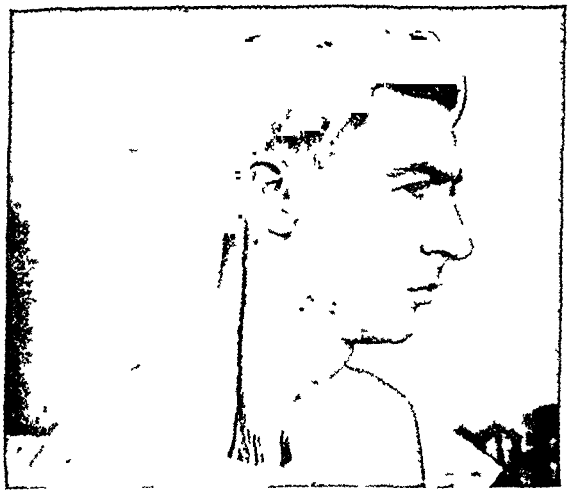


Fig. 1. Illustrating the posterior border of the sterno cleido mastoid muscle. Markings denote the sternal and clavicular attachment.

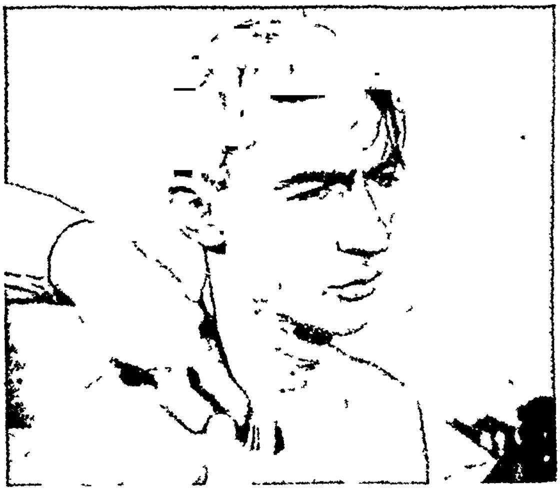


Fig. 3. The right forefinger palpates the resistance of the first rib and can also palpate the lower end of the scalenus anticus muscle.

cases were completely relieved by muscle section.

We feel that errors may be avoided by not infiltrating too deeply and by attempting to make certain that the injection is confined to the muscle. To this end we have devised the following technique.

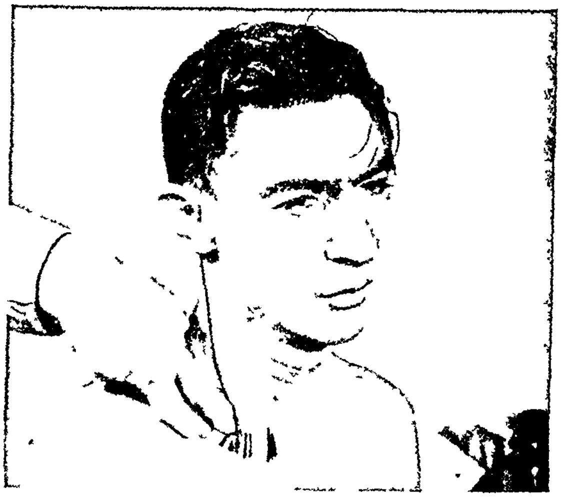


Fig. 2. Index and middle fingers of left hand straddle first rib behind clavicle, pushing the sterno-cleido-mastoid medially at the same time. During this procedure, flexing the head toward the painful side is often necessary.

HYPO-NEEDLE TECHNIQUE OF SCALENUS ANTICUS INJECTION

The patient's chin is turned to the non-painful side and the head slightly retracted. This brings the muscles in

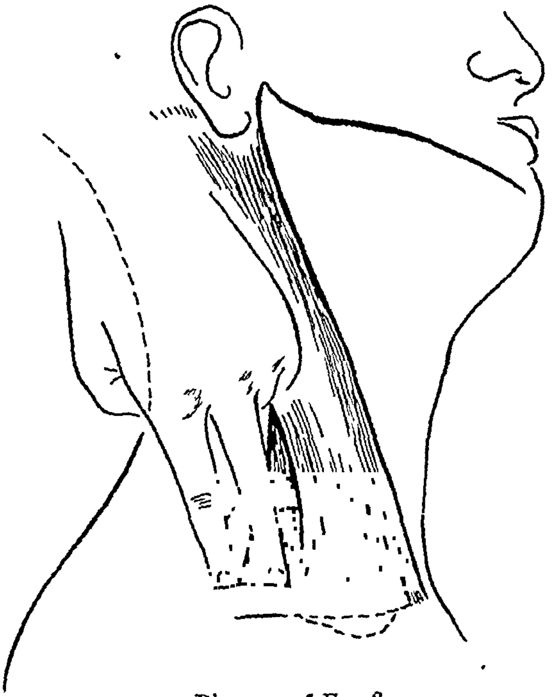


Diagram of Fig. 2

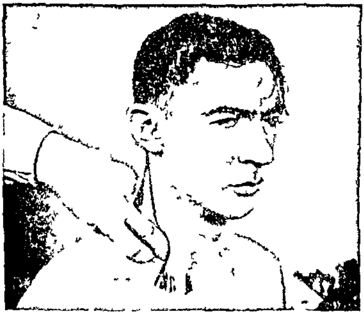


Fig 4 The fingers of the left hand "crawl" up along the belly of the scalenus muscle to a point about one and a half inches above the clavicle

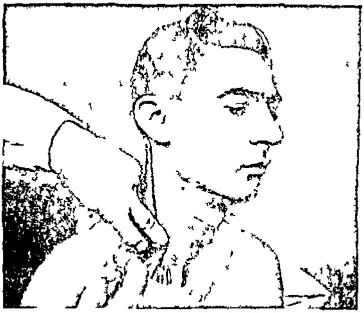


Fig 5 The muscle is held taut between the fingers, at the same time pushing inward with force so that the muscle bellies forward between the two fingers An ordinary ½ inch hypodermic needle is inserted full length and the procaine solution injected

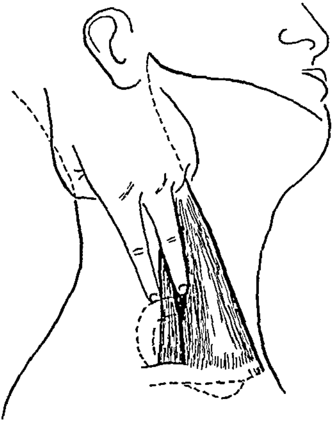


Diagram of Figure 4

this area into greater prominence. The lateral border of the tip of the left middle finger is placed against the outer border of the sterno-cleido mastoid muscle, just above its clavicular attachment, with the forefinger spaced about ¾ of an inch away. At the same time the clavicular head of the sterno-mastoid muscle is pushed medially.

Pressure is made downward and behind the clavicle so that two fingers straddle the first rib near the insertion of the scalenus muscle. The first rib can be further palpated by the index finger of the right hand. From this point upward the course of the muscle can be followed. Maneuvering the head with the free hand alternately flexing and extending the muscles, will help while palpating.

When the insertion of the muscle is well localized, the two fingers "crawl" upward along its belly to a point about 1½ inches above the clavicle. The muscle is then confined to the space between two fingers, and with inward pressure is held taut, so that the muscle bellies outward between the two fingers. An ordinary ½ inch hypodermic needle is inserted full length into the muscle and the procaine solution injected.

Three cases in particular are worth surveying. A veterinarian fered vere pain in the right shoulder, arm and hand for 8 months which had become progressively worse. He had undergone previous treatment including manipulation under anesthesia. The history was irrelevant except for an operation for a calcified "bursitis" on the left side several years ago. Pain involved the entire brachial plexus distribution including the level down to D3. The entire arm was tender including the hand. The fingers were puffy and one half again the size of the fingers of left hand. The palm of the hand had a mottled appearance, and felt warmer than the other hand. Surface temperature readings with a thermocouple showed the right hand to be 1.5° higher than the left. The muscles of the arm were atrophic from disuse. Reflexes were normal.

The patient was unable to abduct his arm to any appreciable degree without severe pain. Pain was ever present and he had lost 18 pounds of weight.

At his initial visit, he was injected at D1, D2 and D3 paravertebrally, the region of the subdeltoid bursa was infiltrated, and a brachial plexus block performed. Within several minutes pain and tenderness had almost completely subsided. Scapular motion was free and painless, whereas previously it was quite painful. Abduction of the arm was increased, but at a certain point became painful and difficult due to adhesions.

Coley's Fluid was administered intracutaneously over the bursal area for its counter-irritant and protein effect. After several treatments the patient was markedly improved. He was advised to return home and report back in a week, at which time he reported that he had remained markedly improved for several days when the pain in the lower arm returned with its former severity. The pain in the deltoid region remained improved and abduction was considerably better, the pain and tenderness of D2 and D3 had not recurred, scapular motion was markedly improved. The pain in the arm and hand, however, was intense.

Re-examination showed that tension against the scalenus anticus muscle was extremely painful. The muscle was infiltrated with 2% procaine solution and immediate relief of pain was obtained.

The patient was admitted to the hospital for section of the muscle. At operation, the muscle was found to be taut. The subclavian vein was markedly dilated, one and one-half times its normal size, just lateral to the first rib. Section of the muscle was followed by immediate relief of pain. Three weeks after his discharge from the hospital he returned with very little pain, stating that it was gradually disappearing, and that he had resumed his office duties. The thickening of his fingers, the inability to maneuver them properly, the normal reflexes, and the dilatation of the subclavian vein, all tend to point to the fact that the changes were due to chronic passive congestion. In 2 months, these changes had almost completely disappeared. At this time equal surface temperature readings were obtained.

J. C. Male, Age 49. Complaint: Pain left side of head, shoulder, arm and back. Duration 3 years. Tripped and fell—awoke in the hospital with no memory until a week following admission. Dizzy, headache, loss of sense of smell and taste and deafness in left ear which later disappeared. Complains of pain left side of the cheek and below the ear and the occiput left side. Positive Romberg. Anesthesia to pain over entire left side of face and neck extending down to level of 3rd rib. Pain when rotating the head to right shoulder, pain shooting into the left arm, chest, neck and back, associated with numbness and tingling of the hand. Reflexes all present and active. No atrophy. Diminution of power of left arm and movement of left shoulder. Sense of vibration and position normal. Left central facial palsy. No definite organic basis for anesthesia. Thought to have had syphilis although serologic tests proved to be negative. Four hospital admissions, two encephalograms.

Examination revealed marked tenderness, at the level of the 2nd cervical vertebrae at which point pain radiated to a point behind and above the left ear. Marked tenderness of the left shoulder girdle with pain and tenderness of the entire arm. The grasp of the left hand was weak as compared to the right hand. Oscillometric readings of left radial and brachial pulse were approximately one-half of that obtained on the right side. Thermocouple readings showed the left hand to be 4° lower than the temperature obtained on the right hand. Marked sensitivity at lower end of anterior scalene muscle. The latter findings were checked on four different occasions and were found to be constant. There was tenderness of the left chest wall down to the level of the 4th dorsal nerve. In the low back region there was marked tenderness of the dermatomes involving D12 and L1. He also complained of sciatic radiation which was associated with tenderness.

Treatment consisted of infiltration of the occipital nerve, brachial plexus, 1st to 4th dorsal nerves, nerve roots of the dorso-lumbar spine, and the sciatic nerve. Prompt improvement followed each injection and at the end of one month patient was discharged and able to return to work. He returned with a complaint of heaviness, numbness, and tingling in the left arm, and twinges in the left side of the face and occiput. Infiltrations of the scalenus anticus muscle on several occasions gave immediate relief of pain. A short while later his scalenus muscle was severed.

Following operation, the skin surface temperature returned to normal within 24 hours. The feeling of weight and tingling in the left arm also completely disappeared. The pain of the occiput and left side of face was also completely relieved. Oscillometric readings were normal 8 days after operation. The patient made a complete recovery.

Diagnosis: Post-traumatic neurosis and concussion state. Neuralgia involving nerve roots C2, brachial plexus, dorsal roots 1, 2, 3, 4, 12, scalenus anticus syndrome, L1 and sciatic nerve, traumatic in origin.

In one patient who sustained fractures of the left transverse processes of C4 and C5, and of the spinous processes of C6 and C7, and D1, the only complaint of pain was slightly to the left of the spinous process of D1. He had a dilated left pupil, weakness and atrophy of the muscles of the left arm. The reflexes were diminished.

The area of complaint showed no evidence of tenderness. Extending the head and forcing the head away from the shoulder at the same time, duplicated his pain. Palpation of the scalenus anticus muscle caused sharp radiation of his pain to D1, exactly at the area of complaint. Oscillometric readings were diminished at the left brachial artery as compared to the right. The skin surface temperature was reduced. *Infiltration of the muscle* with procaine stopped the pain, and eased the headache. The dilated pupil remained unchanged. The patient obtained such marked relief from repeated infiltrations that operation [illegible] ferred. Increased muscle tone and strength of his grip was reported by the patient, and he was able to return to work.

It would appear that a tightened scalenus anticus muscle may cause a variety of symptoms. The usual picture is one of brachial plexus neuralgia. This may also include pain and tenderness down to the level of D4 or perhaps D5. In one patient heaviness, numbness and tingling of the arm and hand was the predominating symptom. It appears also that it may cause facial pain referred by way of the cervical sympathetics. In the instances in which this finding was observed, the facial pain was not associated with tenderness.

SUMMARY

(1) The authors stress the importance of familiarity with anatomy as essential to understanding of the symptoms of this syndrome.

(2) The symptoms of the condition are described.

(3) The value of various treatments is discussed.

(4) A series of cases are reported with the results obtained following injections of the scalenus anticus muscle with procaine solution.

(5) An evaluation of the various forms of treatment is presented.

(6) The technic and results of the authors' treatment is described.

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SUMARIO

(1) Los autores hace énfasis de la importancia de la familiaridad con la anatomía como esencial para entender los síntomas de este síndrome.

(2) Los síntomas de la condición son descritos.

(3) El valor de tratamientos variados es discutido.

(4) Una serie de casos son reportados con los resultados obtenidos siguiendo inyecciones del musculo escalenus anticus con solución de procaina.

(5) Una evaluación de las varias formas de tratamientos es presentada.

(6) La técnica y resultados del tratamiento del autores es descrita.

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The Changing Pattern of Collapse Therapy in The Treatment of Tuberculosis*

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THE *evolution of the accepted operations* used in tuberculosis of the lungs has been a natural development because of the failure of medical treatment to arrest the disease in many cases. A milestone was reached when surgery was proposed in the treatment of tuberculosis.

It is obvious that it will be impossible to cover the entire field of surgical therapeutic measures for the cure or arrest of pulmonary tuberculosis. The various operations that have been used are those on the phrenic nerve causing complete or temporary paralysis, pneumonolysis (the cutting of adhesions), extrapleural pneumothorax, and apicolysis followed by the injection of air. The operation of plombage after an apicolysis, in which paraffin, gauze, or muscle is used to apply the necessary compression, has practically been discarded. The operations mentioned above have been very popular at various times in the history of the evolution of collapse therapy.

However, the operation of thoracoplasty has been used continuously since Wilms and Sauerbruch originated it. From the very simple procedure of removing small portions of the second to eleventh ribs, there has been developed a modern operation of thoracoplasty *including the procedure as advocated by* Semb. This paper, therefore, will be devoted to a consideration of the results of three and a half years experience with the operation of thoracoplasty *as* performed in the Tuberculosis Sanatorium at Hamburg, Pa. It does not include reports of seven and a half years of active surgery on the tuberculous as performed in the Philadelphia General Hospital. These cases will be reviewed in an additional presentation.

A STUDY OF THORACOPLASTIES

The value of the modern, posterolateral thoracoplasty in the treatment of pulmonary tuberculosis is now well established. It is not the purpose of this report to introduce any modifications of this procedure, but to record our experience with the operation during its use at the Pennsylvania Tuberculosis Sanatorium, Hamburg, Pa., from May, 1937, to November, 1940.

The patients operated upon were taken from the two other State Sanatoria, as well as our own, since the surgical department here was the first of the three to be organized. Patients transferred for operative work were returned to the institution which referred them, for convalescence and further medical care.

The series of cases reviewed is composed of 111 patients, who received 262 operations, an average of 2.35 stages each. Two of these individuals had chronic, post-pneumonic empyema, and were classified as non-tuberculous. Thirteen others were not included in most of the studies because they were still in the immediate post-operative period, or were waiting for additional operations. In the preparation of the following tables, as many of the remaining 96 patients as possible were included in each phase of the study. The number varies according to the completeness of the clinical record in each subject. The results of operation are based upon replies received from questionnaires submitted to staff physicians at sanatoria or clinics attended by each patient at the writing of this report. A few returns were made by the patients themselves.

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*Presented at the International Assembly of the International College of Surgeons, Mexico, D. F., August, 1941.

The conventional method of studying results according to the presence or absence of tubercle bacilli in the sputum has not been used, because it does not take into consideration the physical condition. A patient may have negative sputum, and still be a physical or respiratory cripple. The classification suggested by the National Tuberculosis Association was also not considered satisfactory in estimating results over a relatively short period of time, as covered by this report. A combination of the two methods seemed to be more suitable. The cases have been placed in three groups:

1. "Satisfactory"—those who are arrested, apparently arrested, quiescent with negative sputum, and improved with negative sputum.
2. "Improved"—those whose sputum remained positive, although their condition otherwise improved.
3. "Unsatisfactory"—all deaths, and those who remained unimproved or became worse, irrespective of sputum conversion.

A case was considered successfully completed when no open cavities were demonstrated by Potter-Bucky x-ray examination, repeated examinations of concentrated sputum were negative, and the clinical condition of the patient justified this assumption.

Before selection for thoracoplasty, each patient received a laboratory study to determine the blood count, vital capacity, Wassermann reaction, basal metabolic rate, and venous pressure. Generally, a vital capacity of one liter or less was considered to be a contraindication to operation. However, occasionally this figure was disregarded without later regret, if the respiratory reserve was deemed adequate from the clinical standpoint. A thorough cardiac study, including an electrocardiogram, was done in each case. During the past year, bronchoscopic examinations have been included in the routine study. Our experience has lead us to believe, with Alexander, that thoracoplasty is rarely justified in the presence of progressively ulcerating, stenotic, or bronchiectatic lesions (1).

Approximately 85 per cent of the patients received some form of collapse

TABLE 1. PREVIOUS COLLAPSE THERAPY

KIND		NO. OF CASES
PNEUMOTHORAX ON SAME SIDE		90
PNEUMOTHORAX ALONE	-64	
" WITH PNEUMONOLYSIS	- 9	
" PHRENIC AND "	- 2	
" WITH OTHER COLLAPSE	-15	
PNEUMOTHORAX ON OPPOSITE SIDE		1
PNEUMOPERITONEUM		1
EXTRAPLEURAL PNEUMOTHORAX ON SAME SIDE		2
PLOMBAGE ON SAME SIDE		1
THORACOPLASTIES BEGUN ELSEWHERE		3
TOTAL		98

therapy on the same side prior to thoracoplasty (Table I).

Operation was seldom attempted unless artificial pneumothorax had been tried, and found to be unsuccessful or ineffective. Pneumothorax and other minor collapse procedures, although unsuccessful in converting the sputum, frequently improved the physical condition of the patients so that they were then better able to undergo major surgery.

Thoracoplasty was withheld from those who had ineffective pneumothorax until the lung re-expanded, so that operation would not be performed over a free pleural space. However, this ideal situation could not always be attained. In some cases the lung failed to re-expand completely due to fibrosis of the atelectatic and tuberculous areas within the lung, as well as thickening of the pleura (2). When pneumothorax was discontinued, still others had an acute exacerbation of disease, which demanded immediate operation to control it.

Forty-six males and 65 females were operated upon, a ratio of 2:3. Reports from other clinics vary as to the distribution between the sexes; usually the division is about equal (3). The relatively low number of men in our series may be explained by the presence of many cases of anthracosilicosis in the male patients of the Pennsylvania State Sanatoria. In our experience, this condition seldom permits effective collapse. It is also our impression that females are more willing to accept surgical treatment.

Only six negroes are noted in the entire series. This figure is disproportionately small when compared with the number of colored patients in our institutions (14 per cent). Negroes here seem to have a more unstable form of tuberculosis, as well as more extensive lesions at the time of admission.

The youngest patient was sixteen; the oldest, 46. The majority were between 21 and 35 (Table II), which is acknowledged to be the most fa [illegible]). No arbitrary age limit

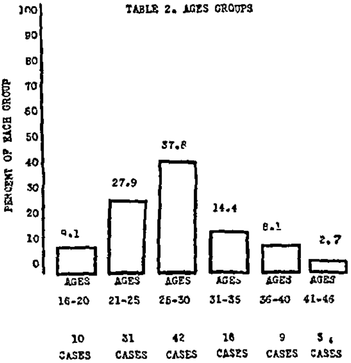
TABLE 2. AGES GROUPS

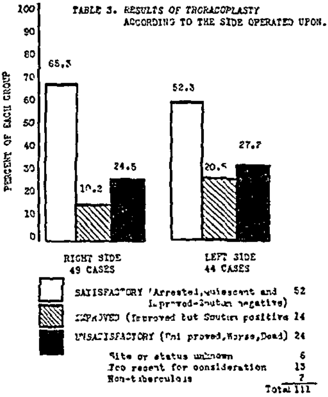
TABLE 3. RESULTS OF THORACOPLASTY ACCORDING TO THE SIDE OPERATED UPON.

cases accepted for operation; however, all of our patients beyond the age of 46 had chronic lesions offering a life expectancy not likely to be lengthened by surgery, or had unacceptable cardiovascular systems.

More patients received the operation on the right side than on the left (Table III). The clinical results and mortality rate were found to be more favorable in the right-sided cases of our series. This is in disagreement with Jessen, who states that a higher mortality occurs in right-sided cases, due to the greater effect of collapse on the thin-walled thoracic veins on the right, than on the thick-walled heart (3).

No limit was set for the duration of disease considered acceptable for thoracoplasty. However, our figures approximate Urquhart's (4). We also agree that those who have had the disease from two to ten years are most apt to have a successful result (Table IV). The more acute, and consequently less stable, lesions do not respond well. It is a mistake, however, to wait too long for a lesion to become chronic. The danger of spread and the development of complications outweighs the advantage of operating over a more productive lesion (5). The very chronic, and therefore extremely fibrotic, lesions also produce less favorable results, due probably to the resistance to collapse offered by the dense underlying lung.

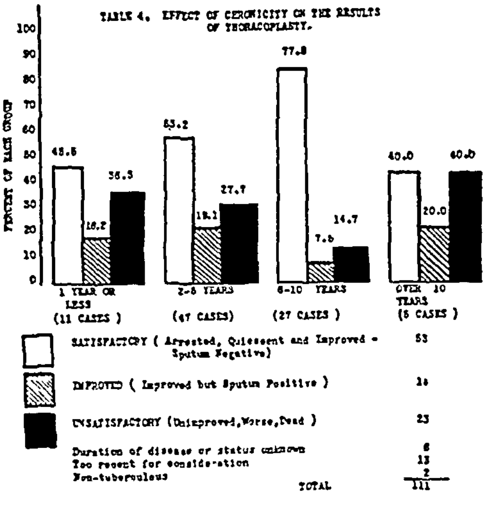
TABLE 4. EFFECT OF CHRONICITY ON THE RESULTS OF THORACOPLASTY.

The number of lesions of long duration may be unusually large. This is because the series represents an accumulation of cases over a period of years. No thoracic surgery was done in the Pennsylvania State Sanatoria prior to May, 1937; consequently many patients have had to wait longer for a thoracoplasty than they will now that facilities are available.

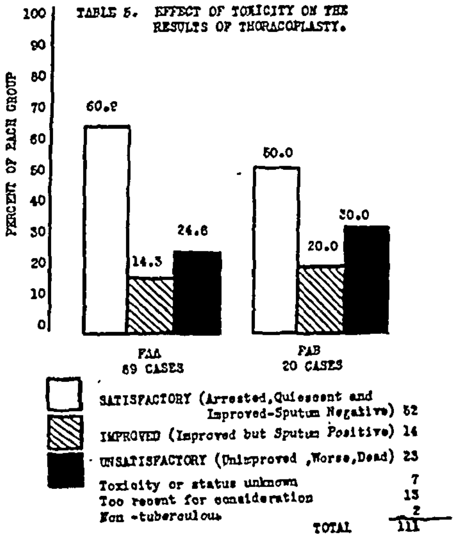
TABLE 5. EFFECT OF TOXICITY ON THE RESULTS OF THORACOPLASTY.

It is preferable to operate on patients with non-toxic lesions. However, we believe with others (6) that thoracoplasty may be justified in the presence of a clinically active lesion when no other less serious procedure gives promise of benefit. Naturally, the results are not as good in the latter group, although the difference is surprisingly small (Table V). The arrangement of patients in this table corresponds to the classification proposed by the National

Tuberculosis Association. We had no patients in Group "C" who received the operation.

Serious tuberculosis complications were present before operation, singly or in combination, in 14 patients (Table VI). Good results were observed in two of these conditions, unmixed tuberculous empyema and non-progressive tuberculosis of the larynx. Thoracoplasty was done on five patients with known ulcerating, stenotic, or broncieetatic lesions of the bronchi. The results obtained in this group were not good; the sputum remained positive in each case, although the physical condition of two of the patients improved. At this time no definite statement can be made as to the effect of the operation on mixed tuberculous empyema, since two of the three cases done require further surgery to obliterate the pleural cavity. However, the end-results of conservative treatment of this condition are notoriously bad. We believe we are justified in assuming from the results of others (7) that thoracoplasty offers these patients more hope of a successful outcome. Residual pleural space from a previous artificial pneumothorax on the same side was obliterated by absorption or aspiration without untoward effect in all eight patients who had this condition.

TABLE 6. COMPLICATIONS PRIOR TO THORACOPLASTY

COMPLICATION	ARRESTED	IMPROVED	UNIMPROVED OR WORSE	DIED	TOTAL
TUBERCULOUS LARYNGITIS	2	2	0	1	5
TUBERCULOUS BRONCHITIS	0	2	3	0	5
TUBERCULOUS EMPYEMA	4	0	0	1	6
MIXED TUBER. EMPYEMA	0	2	0	1	3
RESIDUAL ART. PNEUMO.	8	0	0	0	8
GENITO-URINARY TUBERCULOSIS	0	0	0	1	1

The pathologic nature and distribution of the lesions in the case selected varied considerably. All but one had one or more cavities in the hemolateral lung. The sputum was positive in each case.

For the purpose of studying the extent of the lesions, each lung was divided horizontally into thirds. The results of operation according to the distribution of the lesion on the side operated upon is summarized in Table VII. The character of the lesions is not taken into consideration by this method, record being made only of the portions of the lung containing tuberculous deposits. Fully 69 per cent of the patients had extensive lesions involving two-thirds or more of the lung on the side operated upon. As would be expected, the more successful results were obtained in the less extensive lesions.

The number of lesions limited to the lower third was too small to furnish conclusive evidence of the value of the

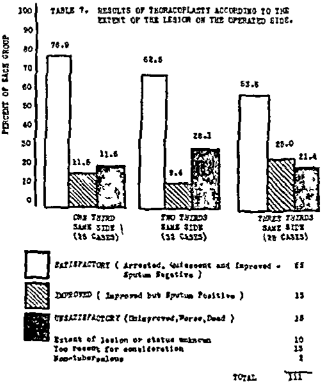
TABLE 7. RESULTS OF THORACOPLASTY ACCORDING TO THE EXTENT OF THE LESION ON THE OPERATED SIDE.

operation in disease of this type. However, three of the four cases in our series having this distribution attained successful closure of their cavities and negative sputum. One was improved.

Over 80 per cent of our patients had bilateral disease. The great majority had only a stable, productive lesion limited to one-third or less of the contralateral lung (Tables VIII and IX). However, 12 others had exudative lesions in the opposite side, and four of the earlier cases were cavernous. Naturally, these patients did not do so well as those with slight or no lesions in this lung.

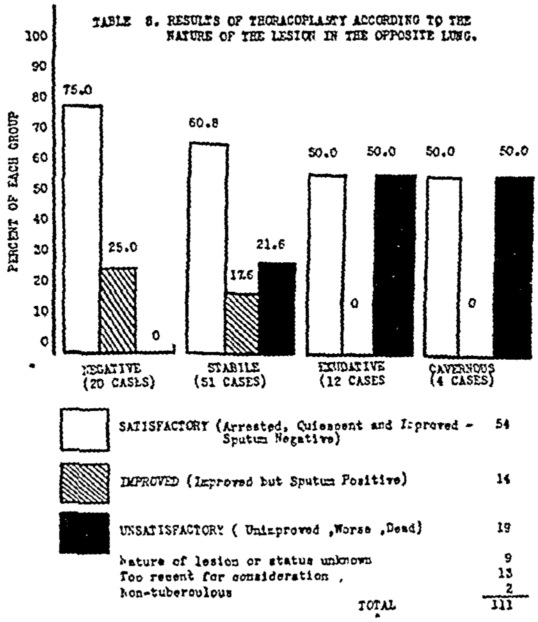
TABLE 8. RESULTS OF THORACOPLASTY ACCORDING TO THE NATURE OF THE LESION IN THE OPPOSITE LUNG.

The achievement of the best results in cases with more extensive involvement of the opposite lung is paradoxical. However, the number of cases having two-thirds or more of this lung involved is too small to be conclusive. It should be repeated that this method of study does not take into account the character of the lesions, only their distribution. Our figures indicate, however, that the pathologic nature of the lesion in the opposite lung is more important than the extent of its distribution.

For these bilateral cases, it has been our practice to induce intrapleural pneumothorax to control the contralateral lesion before establishing extrapleural pneumothorax on the more extensively diseased side. Lately thoracoplasty has been used in this type of case in preference to extrapleural pneumothorax, with apparently better results.

It is evident from the foregoing discussion that the indications for thoracoplasty in our clinic have been rather elastic. We have accepted many unfavorable cases, in the hope of salvaging some who would otherwise face an almost hopeless outlook.

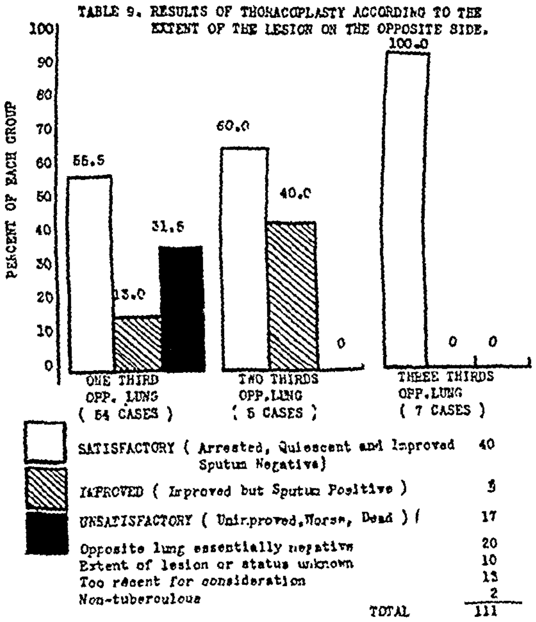
TABLE 9. RESULTS OF THORACOPLASTY ACCORDING TO THE EXTENT OF THE LESION ON THE OPPOSITE SIDE.

Before operation, the patients have been permitted to be up for a few days to improve the tone of their cardiovascular systems. In addition to the usual preparation prior to other major operations with general anesthesia, an immediately pre-operative prophylactic drainage was practiced routinely. All operations were performed with cyclopropane anesthesia, which was found to be very satisfactory, particularly in those cases with reduced vital capacity.

The modern, postero-lateral, multiple stage thoracoplasty was used in every case. The usual parascapular incision was employed, with extension forward and downward when necessary. The first rib was always removed completely. The number and lengths of the subsequent ribs varied according to the indications. Seldom were more than three ribs removed at one operation. Formalinization of the periosteum following removal of the upper three ribs at the first stage was practiced, but avoided at the following stages because of the danger of paradoxical motion. The interval between stages was usually four weeks, although occasionally this period was reduced to three or even two weeks when the condition of the patient was particularly good.

An attempt was made to study the results obtained by apicolysis and removal of the transverse processes. However, factors other than these frequently influence the results of operation, so that interpretation of the figures compiled in a small series of cases such as this must be made with caution. It will be noted in Table X, for example, that better results were achieved when the ribs alone were resected, than when apicolysis or removal of the transverse processes was done. At first glance, it would seem, therefore, that the latter procedures contributed nothing toward a favorable outcome. However, most cases receiving these operations had more favorable lesions than those in which only the ribs were resected. For this reason alone, they could be expected to yield less favorably to collapse. The most successful group was a small one of five patients who had a partial scapulectomy. This procedure was done only for those lesions of limited extent which were expected to be effectively collapsed by two stages.

TABLE 10. RESULTS OF THORACOPLASTY ACCORDING TO THE TYPE OF OPERATION PERFORMED.

PROCEDURE	SATISF. A.Ap.A. Q. In. NEGATIVE	IMPROVED BUT POSITIVE	UNSATISF. WORSE DEAD	TOTAL
RIBS ONLY REMOVED.	27 (64.3%)	6 (14.3%)	9 (21.4%)	42
TRANSVERSE PROCESSES	15 (57.7%)	5 (19.2%)	6 (23.1%)	26
APICOLYSIS	15 (57.7%)	2 (7.7%)	9 (34.6%)	26
PARTIAL SCAPULECTOMY	4 (80.0%)	1 (20.0%)	0	5
ANTERIOR STAGES	1 (33.3%)	1 (33.3%)	1 (33.3%)	3
COMPRESSION GAUZE PACK	1 (50.0%)	1 (50.0%)	0	2
SECOND THORACOPLASTY	1 (100%)	0	0	1

Following operation, the patients were returned to bed, and kept in the Trendelenburg position for twenty-four hours, to prevent shock and encourage drainage of the bronchial secretions. Their position was changed periodically to permit gravity to act upon all segments of the bronchial tree, although they were not permitted to remain for any considerable length of time on the sound side, because of the danger of contralateral spread. During the entire post-operative period, the patients were instructed to spend most of their time lying upon the side operated upon, in order to increase the collapse of the chest wall by the weight of the body, and to prevent the formation of excessive scoliosis. When lying on their backs, a sand bag was placed upon the anterior chest. Fluids were given intravenously and subcutaneously until the cessation of post-operative nausea and vomiting, which were, incidental[illegible] dom marked. Blood transfusion was given almost routinely for its tonic effect, as well as for the prevention and treatment of shock. Fluids and food by mouth were permitted as soon as tolerated. Oxygen therapy has been administered when indicated. Opiates were given only when necessary to control pain. Their use was usually limited to the first few days, since their sedative effect on the cough reflex was believed to favor retention of sputum and spread of the disease.

As a rule, the patients were permitted out of bed on the fourteenth day for bathroom privileges and to exercise their cardiovascular systems. At the end of the third week, each case was again discussed at conference, and a decision was made on the basis of physical condition, repeated sputum analyses, and the x-ray appearance of the chest whether to produce further collapse, or advise a prolonged period of bed-rest and observation.

If the collapse was apparently effective, the patient was transferred to the medical wards for convalescence. A period of at least six months' bed-rest was advised. The patients received from other State Sanatoria were returned to these institutions to complete their convalescence after a period of observation here.

When the sputum remained positive following thoracoplasty, and the collapse was judged to be adequate, the patient was usually kept at complete bed-rest. Not infrequently we were gratified to find the sputum become negative on this régime. Sometimes several months passed, however, before success was achieved. Occasionally, when the source of the tubercle bacilli was found to be in the lower portion of the lung, paralysis of the diaphragm by phrenic nerve interruption succeeded in converting the sputum (Table XI). However, when a residual cavity was evident, a revision was done with excision of re-formed bone. This procedure has not produced gratifying results so far in our clinic. In only one case can it be judged to have been successful. Spread of tuberculosis in the opposite lung occurrred in a number of cases. In six of these, the lesion was thought to be susceptible to control by phrenic paralysis or artificial pneumothorax, but only two of these patients responded favorably to treatment.

TABLE 11. EFFECT OF SUBSEQUENT COLLAPSE THERAPY ON THE RESULTS OF THORACOPLASTY

PROCEDURE	SATISF.	IMPROVED	UNSATISF.	TOTAL
	A,Ap.A. Q.Imp. NEG.	but POSITIVE	WORSE DEAD	
REVISION	1	3	2	6
PHRENIC SAME SIDE	2	2	1	5
PHRENIC OPP.SIDE	2	1	1	4
PNEUMOTHORAX OPP.SIDE	0	1	1	2

To summarize: the results of collapse therapy following unsuccessful thoracoplasty are not encouraging.

Post-operative complications, occurring singly or in combination, are listed in Table XII. The most common, and apparently the least serious complication, was pneumothorax induced by accidental tear of the parietal pleura at operation. The air disappeared by absorption or aspiration in every case without further incident. Wound infections were seldom serious, except when due to tubercle bacilli. The latter infections of the chest wall have not responded well in our hands. Complications were found most often after the first stage (18 per cent), and almost as frequently after the second stage (16 per cent). Difficulty of this kind was seldom experienced after other stages.

TABLE 12. THE INCIDENCE OF COMPLICATIONS FOLLOWING THORACOPLASTY

COMPLICATION	FAVORABLE RESULT	UNFAV. WORSE	DIED	TOTAL
TRAUMATIC PNEUMOTHORAX	8	0	0	8
WOUND INFECTIONS	5	3	0	8
CIRCULATORY FAILURE	1	0	6	7
BRONCHOGENIC SPREAD	1	3	2	6
EMBOLISM	0	0	4	4
HEMOPTYSIS	1	0	2	3
POST-OPERATIVE HEMORRHAGE	1	0	1	2
BRONCHO-PNEUMONIA	2	0	1	3
LOBAR PNEUMONIA	0	0	1	1
TOXIC MYOCARDITIS	0	1	0	1
MASSIVE ATELECTASIS	0	0	1	1
"FLAIL" CHEST	1	0	0	1
HYDROTHORAX	1	0	0	1
PAROTITIS	1	0	0	1

Mortality rates were studied on the basis of cause as well as time relationship (Table XIII). Ten patients died within the first days from conditions directly attributable to the operation. The operative mortality was placed, therefore, at 9 per cent. There were two deaths from massive hemoptysis which occurred in the immediate post-operative period, and were termed "tuberculous." These were possibly precipitated by surgery. The leading cause of death, in our series as well as others (8), was found to be cardio-respiratory failure. This was usually due to shock or respiratory insufficiency from massive atelectasis. All late deaths were from progression of tuberculous lesions in the lungs and elsewhere. The total mortality from all causes in the three-and-a-half-year period was 16.2 per cent.

TABLE 13. THE CAUSES OF DEATH FOLLOWING THORACOPLASTY

SURGICAL DEATHS -- 10 CASES

a. IMMEDIATE -- 10 CASES

1. HEMORRHAGE, 3 HOURS POST-OPERATIVELY.
2. SHOCK, 14 HOURS POST-OPERATIVELY.
3. SHOCK AND ATELECTASIS, 14 HOURS POST-OPERATIVELY.
4. SHOCK, 16 HOURS POST-OPERATIVELY.
5. EMBOLISM, 1 DAY POST-OPERATIVELY.
6. CIRCULATORY FAILURE , 1 DAY POST-OPERATIVELY.
7. CIRCULATORY FAILURE, 3 DAYS POST-OPERATIVELY.
8. EMBOLISM, 3 DAYS POST-OPERATIVELY.
9. CARDIO-RESPIRATORY FAILURE, 5 DAYS POST-OPERATIVELY.
10. CARDIO-RESPIRATORY FAILURE, 10 DAYS POST OPERATIVELY.

b. LATE - NO CASES

TUBERCULOUS DEATHS -- 7 CASES

a. IMMEDIATE - 2 CASES

11. HEMOPTYSIS, 10 HOURS POST-OPERATIVELY.
12. HEMOPTYSIS, 11 HOURS POST-OPERATIVELY.

b. LATE - 5 CASES

13. TUBERC. MENINGITIS, 10 WEEKS POST-OPERATIVELY.
14. TUBERC. BRONCHOPNEUMONIA, 11 WEEKS POST-OPERATIVELY.
15. TUBERC. BRONCHOPNEUMONIA, 3 MONTHS POST-OPERATIVELY.
16. GENERALIZED TUBERCULOSIS, 1½ YEARS POST-OPERATIVELY.
17. FOLLOWING NEPHRECTOMY FOR RENAL TUBERCULOSIS, 3 YEARS POST -OPERATIVELY.

OTHER DEATHS -- 1 CASE

18. BRONCHOPNEUMONIA DUE TO FLOODING OF LUNG THROUGH A BRONCHOPLEURAL FISTULA BY NON-TUBERCULOUS, EMPYEMIC PUS, 6 WEEKS POST-OPERATIVELY.

SURGICAL MORTALITY - 9.0% (10 DEATHS IN 111 PATIENTS)

TOTAL MORTALITY - 16.2% (18 DEATHS IN 111 PATIENTS.

It is interesting to note the effect of the operation upon a number of common physical symptoms (Table XIV). For example, 89.1 per cent of the surviving patients still had some cough and expectoration at the time of this report. Only 10.1 per cent reported a complete absence of sputum. The usual amount of sputum was stated to be about half an ounce daily. Inasmuch as this sputum was consistently negative in the cases included in the group termed "good result,'' its source was concluded to be bronchial (9).

It may also be noted from examination of Table XIV that only 50 per cent of the patients report a gain in weight over the pre-operative level. This can be explained by the fact that most patients reached a normal weight prior to operation. The apparent decrease in weight by 41.3 per cent is due to several factors, such as the number still regaining the loss of weight directly due to operation, those who continue to lose weight because of progression of tuberculosis, and those who have lost some of the excessive weight induced by prolonged bed-rest on resumption of exercise.

TABLE 14. EFFECT OF THORACOPLASTY ON PHYSICAL CONDITION

	ABSENT	DECREASED	UNCHANGED	INCREASED	TOTAL
TOXICITY	60 (76.9%)	8 (10.2%)	3 (3.8%)	7 (9.0%)	78
AMT. OF SPUTUM	8 (10.1%)	61 (77.2%)	4 (5.1%)	6 (7.6%)	79
WEIGHT		31 (41.3%)	6 (8.0%)	38 (50.7%)	75
DYSPNOEA	37 (46.8%)			42 (53.2%)	79

Of the whole number, 46.8 per cent reported as having no dyspnea whatsoever. The remaining patients stated that they had slight shortness of breath, and that, only on exertion. Few had sufficient dyspnea to be annoyed by it.

The complete results of thoracoplasty in our tuberculous patients are summarized in Table XV. The "satisfactory" group comprises 60.2 per cent of the total; the "improved" and "unsatisfactory" groups account for the balance. The prognosis of the patients included in the first group is quite good; in the second, the outlook is questionable, and those classified as "worse" will almost certainly die of their disease sooner or later. In all fairness to the *operation, it must be stated that* some of the patients in the "improved" group may eventually be saved either by additional collapse therapy or by further rest. Five are still under consideration for further active treatment. Then too, five patients in the last two groups refused further surgical treatment, so responsibility for their condition cannot be laid on the surgeon.

Comparison of the results achieved by thoracoplasty in different clinics is difficult for various reasons. No uniform method of classifying patients has been adopted in reports reviewed in the literature. The most common procedure is to evaluate the effect of the operation on the rate of sputum conversion in the surviving patients. On this basis, 75 per cent of our patients may be said to have had a successful operation (Table XV). The results obtained in two of the leading clinics in the country are as follows: Alexander and Haight report 93.4 per cent of their living patients to have closed cavities and negative sputum due to the modern postero-lateral thoracoplasty (10). O'Brien's results are reported as 81.65 per cent from the same type of operation (11).

Another factor which adds to the dif-

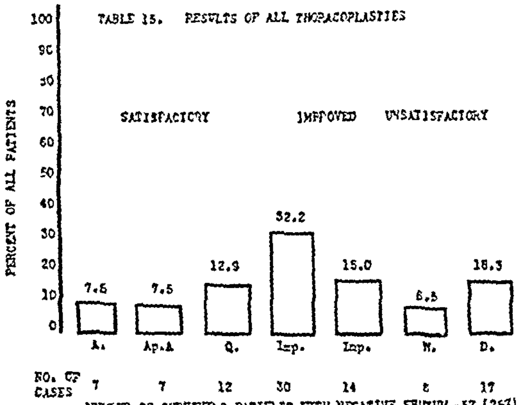
TABLE 15. RESULTS OF ALL THORACOPLASTIES

NUMBER OF SURVIVING PATIENTS WITH NEGATIVE SPUTUM -57 (75%)
" " " " " POSITIVE " -19 (25%)

Sputum or status unknown	3
Too recent for consideration	13
Non-tuberculous	2

ficulty is the selection of cases Naturally, those who limit the operation to patients with less extensive lesions will have more favorable results, although some patients will then be denied the benefit of a life saving procedure It may be pointed out here again that we have a large percentage of very far advanced cases at this institution (80 per cent), from which our selection must be made

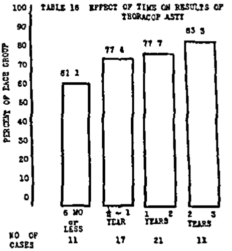

TABLE 16 EFFECT OF TIME ON RESULTS OF THORACOPLASTY

NUMBER OF SURVIVING PATIENTS WITH POSITIVE SPUTUM	19
NUMBER OF PATIENTS WHO DIED	17
NUMBER OF PATIENTS TOO RECENT FOR CONSIDERATION	15
NON TUBERCULOUS	2
TOTAL	111

The two non tuberculous empyemas were preceded by typical lobar pneumonia Repeated examinations, including cultures, of the pus from the pleural space failed to show tubercle bacilli Both cases had prolonged inadequate drainage before entering the institution The first had a modified Schede and a two stage thoracoplasty, limited to the lower portion of the chest, which successfully obliterated the pleural space Three months after the last operation, the wound was entirely healed and there was no recurrence of the empyemic fluid The second patient had a first stage thoracoplasty, with removal of the uppermost three ribs, without incident However, approximately three weeks later difficulty with drainage was experienced and pus accumulated in the pleural cavity, with the development of a bronchopleural fistula Due to a combination of narcosis and anesthesia preparatory to rib resection for improvement of drainage, flooding of the lung by purulent secretions occurred The patient died one week later from generalized bronchopneumonia

TABLE 17 FUNCTIONAL STATUS OF THORACOPLASTY CASES

LENGTH OF TIME	NUMBER OF CASES	BED	EXERCISE	WORKING	PATIENTS STILL IN SANATORIUM
6 MONTHS OR LESS	18	15 (83 3%)	3 (16 7%)	0	15 (83 3%)
½ TO 1 YEAR	22	12 (54 %)	10 (45 5%)		17 (77 4%)
1 TO 2 YEARS	27	6 (18 5%)	15 (55 5%)	7 (26 0%)	15 (55 5%)
2 TO 3 YEARS	12	1 (8 3%)	7 (58 %)	4 (44 4%)	8 (66 6%)

The results achieved by thoracoplasty have so far been quite stable (Table XVI) Indeed, the percentage of cases with negative sputum has increased with the passage of time

At the time of this report, most of our patients who have been operated upon are still confined to sanatoria (Table XVII), the percentage decreasing as the length of time since operation increases Only 8 3 per cent of these patients remain in bed after two years, 91 7 per cent of the patients are on exercise preparatory to their discharge, or are working either at home or in the institution to which they returned following their operation

CONCLUSION

One hundred and eleven patients have undergone thoracoplasties of the modern postero lateral type during the first three and a half years of thoracic surgery at the Pennsylvania Tuberculosis

Sanatorium. The indications for operation have been rather elastic, and the percentage of cases with bilateral disease has been rather high (80 per cent). However, the result of operation was "satisfactory" in 60.2 per cent, "improved" in 15 per cent, and "unsatisfactory" in 24.8 per cent. The total mortality rate was 16.2 per cent, the operative mortality, 9 per cent (3.8 per cent per stage). Seventy-five per cent of the surviving patients had negative sputum at the time of reporting, three months to three and a half years after operation.

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RESUMEN

El perfeccionamiento de las operaciones quirúrgicas aceptadas hoy día para el tratamiento de la tuberculosis pulmonar, ha sido la consecuencia del fracaso del tratamiento medicinal en contrarrestar la enfermedad. Se ha mejorado mucho la técnica de la tóracoplastia, y se ha perfeccionado también su aplicación a los casos específicos de que se trata en este trabajo. Desde que se ideó la operación de Wilms Sauerbruch, se han hecho muchas modificacione. A causa de lo inadecuado de la tóracoplastia, que no basta para efectuar la curación, se ha vuelto a poner en práctica el neumotórax extrapleural, y se ha propuesto una nueva operación: el neumotórax extraperióstico. Tienen aplicación muy limitada las operaciones en el nervio frénico, la neumonolisis intrapleural y el "taponamiento" ("plombage"). Es preciso hacer la selección cuidadosa de los pacientes que requieren el método de Monaldi, para el desagüe externo de cavidades.

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The Treatment of Cancer of the Rectum* and Rectosigmoid

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THE purpose of this paper is to outline in a brief and concise fashion, the treatment of cancer of the rectum and rectosigmoid as it is practiced in the Westfield State Sanatorium, Cancer Division, Westfield, Massachusetts, and to present summaries of seven cases which bring out various modes of surgical treatment as carried out in our hospital. The Westfield State Sanatorium, Cancer Division, is one of the State Hospitals under the Division of the Department of Public Health, and which admits cancer patients from the western half of the state.

It must be further explained, that the cases discussed in this paper, are such that must be accepted by a state institution for treatment regardless of the age and physical condition of the patient and the operability of the lesion. Consequently, this automatically leads to a lowered operability rate, a higher mortality rate, and a greater morbidity. Desperate chances must be taken in order to attempt a cure rather than let the patient go to a more advanced stage, where there is a hundred percent mortality if cancer of the rectum and rectosigmoid are untreated.

Daland[1] stated, "There is hardly a more miserable man alive than one with an advanced cancer of the rectum." Advanced cases of the rectum are often accompanied by excruciating tenesmus, diarrhea and mental changes. Therefore, it is our principle that patients with obstruction are given what is known as the "kindly" colostomy and usually live in comfort although the life expectancy is unchanged.

The signs and symptoms of cancer of the rectum and rectosigmoid are most glibly written in many textbooks of surgery, with the result in many, many instances of a false security on the part of the examining physician, because the signs such as rectal bleeding, ribbon-like stools, constipation or at least some change in bowel habit are not pathognomonic of rectal malignancy. Because of this, many a malignant lesion has been overlooked for the sole reason that the patient's signs and symptoms did not entirely conform to the usual textbook picture. Many of the patients [illegible] in our Out-Patient Dep [illegible] who have been treated, in many cases unsuccessfully and without relief, and in desperation and as a last resort, they were sent to our hospital for a complete and detailed physical examination from a malignant point of view. This fact alone would tend to bring down the percentage of early and successfully treated cases in our institution. Therefore, the problems that face us in this cancer hospital are not alone those of major surgery for malignant lesions of the rectum and rectosigmoid, but those of the treatment of cases that have been treated elsewhere symptomatically and locally for many months with no results and with a consequent downhill course.

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The diagnosis of a malignant lesion of the rectum and rectosigmoid depends entirely upon the methods and means available to the examiner. These are first and foremost the much discussed and much omitted digital examination. By this procedure, about 90% of the rectal malignancies are palpable, for they lie within 5 inches of the anal margin. Because such a high percentage of rectal lesions are palpable by the simple digital examination, there is no reason why this method should not be used first and never overlooked. The second means at our disposal is the sigmoidoscopic examination which is second only in importance to the everyday, digital examination. The sigmoidoscope also allows one to do a complete and careful visual examination of 25.0 cms. of the lower large bowel. In addition, the lesion may also be biopsied from almost any point of the compass. It has been our experience that some of these lesions so easily visualized are benign rectal polyps on the surface, but when biopsied at the base show a definite malignant change and infiltration into the rectal wall. These two procedures should be supplemented by the newer and yet common barium studies by a competent Roentgenologist. Although the barium enema is an excellent confirmatory procedure, it is by no means infallible, as small lesions may not show the characteristic filling defects. This method has been supplemented still further by the addition of the so-called double contrast enema. But this, too, fails to aid in making the diagnosis a positive one in some instances, although it is the procedure of choice in multiple colonic polyposis, where the percentage of malignant degeneration is exceedingly high. Too many times a barium enema and a double-contrast enema are omitted because the lesion is large and obstructing and within the reach of the examining finger or the sigmoidoscope. After a successful operation has been performed, it has been the sad experience that the patient not only had the lesion for which he underwent his operation, but also as many as three more elsewhere in his large bowel. This latter reference has been a personal experience. We have made it a practice to avail ourselves of these methods to the fullest extent, so that when the patient is ready for operation, all available information is at hand. Therefore, all possible information plus an experienced operating team all aid to bring down our mortality percentage even though the cases coming to the institution are often pitiful surgical risks.

As many of these patients with rectal and rectosigmoid lesions are in the upper age brackets, a most tedious and careful preoperative workup is necessary in order to insure a safer surgical risk and a less stormy convalescence. Our outline consists of a routine urinalysis, a complete blood examination, N.P.N., Wassermann, blood typing, determination of the total protein, the hematocrit reading, the carbon dioxide combining power, the chloride determination and total base which is the summation of sodium chloride and bicarbonate in milliequivalents. This is supplemented by the use of a high caloric, low residue type of diet and any necessary transfusions; also the administration of parenteral fluids of glucose and saline as might be indicated from the plasma protein readings, the result from hematocrit studies and the total base. In addition, a cystoscopic examination is most important in order to determine whether the bladder floor is at all involved. The patients are further prepared by the administration of one-half ounce of a saturated solution of magnesium sulfate, twice daily for four to six days, and daily rectal irrigations of tap water or normal saline. Repeated irrigations of soapsuds are not used as they often set up a severe and intractable proctitis, to add to the misery of the patient with a rectal malignancy. For two days previous to the operative day, no laxatives or enemas are given, and during these forty-eight hours, deodorized tincture opium is given by mouth, minums twenty every eight hours, in order to produce the necessary inactivity of the bowel. For one day previous to the operation, nothing but clear liquids are allowed the patient by mouth and these are supplemented by the routine administration of parenteral glucose and saline. Just before being admitted to the operating room, an indwelling catheter is strapped into place and the bladder is thoroughly irrigated with warm boric solution and allowed to drain out completely.

The choice of anaesthesia is dependent upon the condition of the patient and the decision of the surgeon, which is based upon the physical findings. Immediately after the anaesthesia has been started, a cannula is inserted into the saphenous vein at the internal malleolus and tied in, thus allowing an immediate slow drip of physiological saline and any necessary blood during the operation and post-operatively for twenty-four hours. Thereafter, the cannula is withdrawn in order to prevent setting up a severe phlebitis. From that time on, all necessary parenteral fluids and transfusions are given in the antecubital vein. A procedure which has been used by the author in our hospital is the introduction of sulfanilamide crystals within the peritoneal cavity. This drug is usually sprinkled over the newly made pelvic floor, whenever a combined abdominoperineal operation is done. The customary amount employed is one-hundred-fifty grains intra-abdominally for the first twenty-four hours, which usually results in a blood level ranging as high as 0.8 percent, considered bactericidal if maintained at that level. In order to do so, we have further supplemented this procedure by the use of hypodermoclyses of 0.8 percent sulfanilamide solution in normal saline. It has been found from our experience that the daily administration of one liter of 0.8 percent sulfanilamide in normal saline, which is one-hundred-twenty grains of sulfanilamide, is more than sufficient to maintain the necessary bactericidal blood level. In patients who have had the combined abdominoperineal resection or a colostomy with a posterior resection, it has been found that after the removal of the large posterior pack, daily irrigations of warm 0.8 percent sulfanilamide in normal saline solution, decreases to a great extent, the customary amount of sloughing and purulent discharge and hastens the growth of fresh granulating tissue.

CASE REPORTS

Case 1. (1771) A fifty-six-year-old male entered with a history of only three months' rectal bleeding. Digital examination was negative, but sigmoidoscopy revealed a lesion twelve centimeters from the anal margin and biopsy proved it to be adenocarcinoma. Barium studies were found to be negative. The Miles combined one-stage, abdominoperineal operation was considered the procedure of choice and performed. The pathological report revealed an ulcerated area 4.0 x 2.5 cms. and situated 12.0 cms. from the anal margin. Microscopic report showed marked invasion of the rectal wall and extension into the serosa with no vascular invasion and six out of six negative perirectosigmoidal lymph nodes. As this patient was totally asymptomatic except for rectal bleeding for three months, which in itself is important, the favorable end result proved what a careful rectal examination can accomplish. The one-stage abdominoperineal operation after Miles, results in the formation of an abdominal colostomy and the removal of the entire rectum, lower rectosigmoid and contiguous gland-bearing regions up to the inferior mesenteric artery. That patient was operated upon in August, 1939 and on May 1, 1941, he was totally asymptomatic and had returned to his former occupation.

Case 2. (1852) A forty-two-year-old female, was admitted complaining of profuse vaginal and rectal bleeding of four months' duration and associated with twenty pounds loss of weight, diarrhoea of at least twelve movements per day, urinary frequency and dysuria. Digital examination revealed a very large, fungating and ulcerating mass and a frozen pelvis. The biopsy was diagnosed as adenocarcinoma. A colostomy was advised and performed, using the Vernon David[2] procedure. This case report summarizes the value of the previously mentioned "kindly" colostomy and is carried out only in hopelessly advanced cancers of the rectum and rectosigmoid, where there is a fixed pelvis. This procedure is done through a left McBurney incision and the loop of sigmoid is brought out through the small incision, at least one to two inches above the skin. A small rent is made in the mesosigmoid and the peritoneum and fascia are closed in the usual manner. Small triangles of skin and subcutaneous tissue are excised on either side of the incision, leaving a rectangular area in the center, which is brought together underneath the loop of bowel with silk sutures. The remainder of the incision as well as the V-shaped areas are closed snugly, so as to reduce the possibility of a prolapse of the colostomized bowel. Because of the small incision used, infection is less likely and the possibilities of a postoperative hernia are reduced.

Case 3. (2929) A thirty-three-year-old female was admitted with a history of rectal bleeding, intermittent, for one year. Digital examination was negative but sigmoidoscopy revealed a large polyp with a long pedicle, which could be seen at the end of the sigmoidoscope, after it had been inserted up to its full length. A biopsy of the tip showed it to be a benign mucosal polyp. Repeated sigmoidal examinations were made by several other examiners, later on other occasions, but no mucosal polyps or any other pathology could be visualized. Barium and double contrast enemata revealed no significant alteration of the contour of the colon at any point, as interpreted by the Roentgenologist. As her intermittent rectal bleeding continued, surgery was advised. A left paramedian incision was made, because if the polyp base were malignant, a one-stage abdominoperineal operation after Miles could be performed. However, if the polyp were found to be malignant only at its tip, a routine sigmoidotomy would be carried out. The large bowel was manually palpated and found to be negative as well as the liver and regional lymph gland areas. In the midsigmoid, a definite pedunculated polyp could be felt, and when traction was made upon its tip, a definite dimpling of the serosa occurred at the site of the polyp base. A longitudinal incision was made directly over the polyp and it was brought out through the incision, along with the pedicle and the entire base. A fairly wide elliptical incision was carried out around the base through the submucosa and the entire polyp was removed. Frozen section showed it to be benign in its entirety. The base was sutured in two layers. Adjacent areas were inspected and no other polyps were found. The sigmoid was closed in the usual manner. One-hundred-fifty grains of sulfanilamide crystals were introduced into the peritoneal cavity and the abdomen was then sutured together in layers in the usual fashion. According to Cattel and Swinton[3], "Sigmoidal polyps should be removed by sigmoidotomy rather than by fulguration through the sigmoidoscope because of the danger of hemorrhage, perforation and technical difficulties and because of the difficulty in excluding cancer." It is our practice to keep such patients under close observation for an indefinite period.

Case 4. (1024) A seventy-four-year-old male was admitted on September 13, 1939 with a history of a previous two-stage colostomy and posterior resection. He had been operated upon in January, 1939 and an examination revealed a retraction of his colostomy which allowed fecal spillage into his terminal gut and this drained posteriorly. A Devine colostomy was decided upon and performed in the right upper quadrant and thereby diverted the fecal stream from the posterior wound. A simple transverse colostomy would have done just as well. The Devine procedure could better have been carried out in the left upper quadrant. This palliative measure resulted in more comfort.

Case 5. (3162) A fifty-three-year-old male entered with a history of fifteen pounds loss in weight in one year, increasing fatigue, a heavy feeling in the rectum for the past two months, incipient dysuria and nocturia and bleeding per rectum, but only once. Digital examination revealed a large, ulcerating and a rather fixed lesion which was proven adenocarcinoma by biopsy. A left paramedian incision was made and the abdomen explored. The liver was studded with multiple nodules of varying sizes and regional glands were found in the lower abdomen and pelvis. It has been observed by Daland[4] that a similar patient who underwent a Miles' operation lived in comfort for four years. The same operation was done on this patient on September 10, 1940 and on May 1, 1941, the patient was alive and comfortable.

Case 6. (3065) A forty-eight-year-old male was admitted in August 6, 1940 with complaints of alternating constipation and diarrhoea and rectal pain since July 2, 1940. Digital examination revealed a fungating mass just within the anus, which biopsy proved to be a carcinoma simplex, mucinous type. Cystoscopy was negative. Nupercaine anaesthesia given intraspinally produced a respiratory collapse and surgery was then delayed for one week when a Vernon David colostomy was performed under gas oxygen ether anaesthesia Three weeks later a posterior resection was attempted and this large rectal mass was separated with difficulty from the prostate In addition, the bony pelvis was markedly narrowed so that it was impossible to use right angled clamps above the growth Because of the complicating factors mentioned, the bowel was transected about 1 0 cm above the mass, after all exposed tissues were thoroughly covered with gauze soaked in a solution of ten per cent tannic acid in seventy percent alcohol, as recommended by Lynch A moderately large, hard rubber tube was inserted into the terminal opening and held in place by two interrupted sutures The entire posterior wound was completely packed about the tube with gauze soaked in ten percent tannic acid in seventy percent alcohol which produces a heavy protective eschar and diminished infection On May 1, 1941, eight months after the original operation, the patient had a well functioning colostomy and a healed posterior wound

CASE 7. (1773) A fifty eight year old male was admitted on August 7, 1939, having had a colostomy done three and a half months previous at another institution for what was believed to be an inoperable rectal carcinoma He was referred here because of a prolapse of his *colostomized bowel and a reversal of* his stomata, thus allowing feces to drain from his inferior stoma Through a left paramedian incision, the distal loop was transected near the abdominal peritoneum and closed Due to a redundancy of the sigmoid, 17 0 cms had to be resected before the lower bowel could be buried below the newly made pelvic floor Because of the size of the mass, which nearly filled the pelvic outlet and the accompanying inflammation, the new pelvic floor was made under difficulties Posterior resection was carried out with extreme caution and the mass was freed from the bony pelvis The pathological report revealed that the mass measured 5 5 x 7 5 x 4 5 cms and the adenocarcinomatous tissue did not pass the line of dissection Three out of three *peri recto sigmoidal* glands were negative, but there was vascular invasion Rankin[5] pointed out that many large tumors of the rectum may have much inflammation about them and fixation has resulted more often from inflammatory reaction rather than from malignant extension The patient to date is asymptomatic

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SUMMARY

Seven cases have been presented demonstrating the complicating factors of carcinoma of the rectum and rectosigmoid, with the methods of approach employed and the end results. A summary of the operative indications, preoperative and postoperative treatment has been discussed along with the newer sulfonamide therapy.

SUMARIO

Siete casos han sido presentados demostrando los factores que complican el cancer del Recto y del Rectosigmoid y los metodos considerados en el tratamiento y los resultados finales.

Un resumen de los indicaciones operatorias, tratamientos preparatorios y postoperatorio han sido discutidos junto con la nueva terapeutica con Sulfonamide.

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La Enfermedad de Nicolas Favre o Cuarta Enfermedad Venerea. Contribucion al Estudio del Tratamiento Quirurgico de sus Localizaciones Ano-Rectales. *

CONTRIBUTION TO THE SURGICAL TREATMENT OF ANO-RECTAL LOCALIZATIONS OF THE NICOLAS FAVRE OR FOURTH VENEREAL DISEASE

PROF. ALFREDO BORJAS

SUMMARY

The author describes *Nicolas' and Fabre's* or the so called *Fourth Venereal Disease.* This paper deals with a study of the surgical treatment of the ano-rectal localization of the disease. The author defines the disease as a venereal, contagious, inoculable, infectious chronic disease due to an ultravirus. Pathologically it is an adeno-lymphocellulitis with sclerosing tendencies. It is manifest by general symptoms during the phase of invasion and secondary localizations in the inguinal, perineal region and the lower parts of the digestive, urinary and genital tracts. The malady creates an allergic state in the patient which is evidenced by a specific intradermal reaction known as the Frei reaction. The author gives a summary of the history of the disease in Venezuela. As a result of clinical, roentgenologic and endoscopic studies the author concludes that the problem presented by this pathologic entity is of a serious nature and tends to create chronic stenosing rectitis. Acute Favre's rectitis demands early diagnosis and proper treatment. Definitive colostomy is proposed as the elective form of treatment in chronic stenosing rectitis. The author discusses the site and type of colostomy preferred. In some serious cases excision of the rectum must be resorted to.

Consideraciones generales sobre la enfermedad de Nicolas y Favre o cuarta enfermedad venérea. Concepto moderno de la enfermedad. Su historia en Venezuela.

SI AL leer la Literatura Médica de los últimos 20 años realizamos un estudio de síntesis de los conocimientos relativos a las afecciones descritas en épocas diferentes, bajo nombres diversos, por Autores de distintas nacionalidades y que engloban los procesos morbosos descritos con los nombres de: Bubon Tropical. Enfermedad de Nicolas Favre. Poradenitis inguinal subaguda. Poradenolinfitis. Linfogranulomatosis inguinal. Estrecheces inflamatorias del recto. Rectitis proliferantes y estenosantes. Síndrome de Jersild. Estiómene vulvar. etc; tenemos que admitir que tales procesos no son otra cosa que nombres distintos, formas clínicas o localizaciones diferentes y períodos evolutivos variados de una sola y misma enfermedad que a la luz de los conocimientos modernos y por poseer características especiales etiopatogénicas, clínicas, anatomopatológicas experimentales y biológicas, amerita ser identificada como una entidad nosológica independiente. Esta nueva enfermedad de rica sinonomia creemos debe ser definida como una enfermedad infecciosa, contagiosa e inoculable, de origen generalmente venéreo y de evolución crónica, producida por un ultravirus filtrante que desarrolla en los organismos afectos una reacción alérgica característica Anatomo patológicamente es una adenolinfocelulitis esclerosante y clínicamente se manifiesta por síntomas generales en el período de invasion y por síntomas locales de gran polimorfismo que ocupan preferentemente las regiones inguino perineal y las porciones bajas de los aparatos digestivo, urinario y genital

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*Presented at the International Assembly of the International College of Surgeons, Mexico, D. F., August, 1941.

Esta enfermedad espera aun el nombre definitivo con que ha de ser reconocida en la nosografia internacional La mayor parte de los nombres con que se la describe fueron creados para designar formas clínicas de la enfermedad o características particulares del proceso, pero todavía no se ha llegado a un acuerdo para la elección de un nombre que sirva para identificar la enfermedad considerada en conjunto

Los términos Bubon Climático y Bubon Tropical empleados por los primeros observadores coloniales no poseen sino un interes histórico y sirvieron solo para designar ciertas variedades de adenitis inguinales que mas tarde se comprobó correspondían a determinadas formas clínicas de la enfermedad que nos ocupa Linfogranulomatosis inguinal es un término empleado por numerosos autores

Fisch, Frei, Hellestrom, Lutz, Phylactos etc, para designar la localización sobre los ganglios inguinales del proceso Ha tenido suerte y se emplea aún en la literatura médica mundial para referirse a la enfermedad en su conjunto a pesar de ser un nombre inadecuado, impreciso y confuso que se presta a una desgraciada confusion con otras afecciones diferentes, el Linfogranuloma maligno o Enfermedad de Hod King y el Granuloma venéreo

Enfermedad de Nicolas Favre, es un término que se usó al comienzo para designar la etapa ganglionar inguinal de la enfermedad rindiendo así un justo homenaje a los sabios Médicos Lyoneses que tanto contribuyeron con sus clásicos y muy completos trabajos a su identificación y divulgación de la etapa ganglionar de la enfermedad, mas tarde se ha querido darle un mas amplio sentido a dicho nombre empleandolo para designar la enfermedad de la cual la localización ganglionar descritas por los Autores Lyoneses, no es sino una de las formas clínicas Tambien se la ha llamado Poradenitis inguinal subaguda nombre relacionado con el caracter supurativo en focos aislados de las lesiones ganglionares Este nombre no califica tampoco las características generales del proceso y creemos no tiene por consiguiente razones especiales de subsistir

Otra sinonimia son Linfopatía venérea y Poradenolinfitis, ultimamente Cole propone llamarle cuarta enfermedad venérea y Stannus quinta enfermedad venérea Esta enfermedad es bastante bien conocida a la hora actual en muchas de sus formas clínicas, en su etiología, en su reacción biológica, en su anatomía patológica y en su etapa experimental pero creemos que hay aún muchas lagunas especialmente en lo referente a patogenia, evolución clínica y tratamiento

Creemos que hay todavía mucho que estudiar en el diagnóstico precoz de sus formas de invasión, microchancros de los genitales, uretritis, ulceraciones genitales, anorectitis agudas Pensamos que en la mujer existe una gran laguna en la evolución clínica de la enfermedad, entre el accidente inicial de inoculación y la aparición de las manifestaciones tardías ano-recto perineogenitales, laguna correspondiente a la etapa de linfoadenitis intrapélvica y que debe pasar generalmente confundida con manifestaciones anexiales

En materia de tratamiento no se posee aún la medicación específica, pero nadie niega la acción muy electiva de los antimoniales y los derivados de la sulfanilamida, especialmente activos en las formas nuevas, en lo que podríamos llamar las manifestaciones primarias de la infección, pero sinembargo no poseemos un criterio fijo sobre la duración ni dosificación exacta de estos tratamientos de ataque, ni a la hora actual conocemos un test que nos guíe sobre la actividad o curación de la enfermedad

HISTORIA DE LA ENFERMEDAD EN VENEZUELA

Antes de 1922 se ignora la naturaleza exacta de la enfermedad, las localizaciones ganglionares inguino crurales por su evolución subaguda o crónica y su aparente falta de puerta de entrada son habitualmente consideradas como de origen tuberculoso; las estrecheces rectales son atribuidas a la Sífilis, la Tuberculosis y las recto-colitis parasitarias y en especial a la ameba disentérica. Con lo que respecta a las lesiones complejas ulcero-hipertróficas, edematosas y elenfacíasicas de los genitales externos se creía eran el resultado de las poli-infecciones venéreas abandonadas a su evolución, a las linfangitis estreptocóccicas a repetición y en algunos casos a la filariosis.

En 1922 E. P. De Bellard presenta las primeras observaciones de Enfermedad de Nicolas Favre en Venezuela en un importante trabajo clínico y experimental. Considera como el tratamiento de elección de las adenopatías inguinales su extirpación quirúrgica. A partir de este trabajo se despierta en nuestro país el interés por esta variedad de adenopatía inguinal que se revela muy frecuente y de una evolución bastante larga y fatigante para los pacientes. Casi todos los trabajos de esta época se refieren al estudio clínico, a ensayos de inoculación experimental y a consideraciones terapéuticas y deben mencionarse las comunicaciones que a estos respectos presentan los Dres. F. A. Rizquez, Martin Vegas, César Flamerich, Heberto Cuenca, García Maldonado y Alfredo Borjas. Sobresale la Tesis doctoral de Francisco Flamerich aparecida en 1928 "Contribución al estudio de la Poradenitis inguinal subaguda en Venezuela." donde el tema es abordado con rica documentación clínica y experimental.

Para 1932 con la Tesis doctoral de Ernesto Vizcarrondo "La reacción de Frei en las adenopatías inguinales y en las estenosis rectales." se inicia en nuestro país el estudio de las localizaciones ano-rectales del virus poradénico y se comienza a emplear la intradermo reacción de Frei como procedimiento biológico de identificación de la nueva enfermedad. Vizcarrondo revela en su Tesis que mas del 90% de las estrecheces rectales por él estudiadas presenta una reacción de Frei positiva.

Martin Vegas prepara el primer antígeno poradénico tipo Frei. En 1934 Lares Gabaldon estudia el papel de la amebiasis intestinal en las rectitis estenosantes.

En 1936 Renato Planas hace un estudio clínico del Síndrome de Jersild. Ya para este época los Cirujanos comienzan a interesarse por el grave problema de las Rectitis estenosantes, linfogranulomatosas, alarlados por su frecuencia su gravedad evolutiva y la rebeldia que maestran a las terapeuticas médicas conservadoras.

En 1938 M. Perez Carreño y el Professor R. Jaffé, presentan un estudio muy completo clínico y anatomopatológico del Síndrome ano-recto perineo genital publicado en la Revista de la Policlínica Caracas. El mismo año Perez Carreño en su trabajo "Estado actual del tratamiento de las estrecheces del recto" aborda el problema quirúrgico de las Rectitis estenosantes y propone un nuevo tipo de Colostomía. Pedro Santeliz escribe su Tesis doctoral sobre "Las estenosis rectales y el Síndrome ano-recto perineo genital" basada en el estudio cuidadoso de 100 casos.

Reyna Morales escribe sobre las localizaciones del virus poradénico en los ganglios cervicales.

Félix Luciani Lairet, publica un trabajo experimental sobre cultivo *in vitro del ultra* virus linfogranulomatoso.

En 1940 Luis H. Rodriguez *Díaz ofrece* como Tesis doctoral una extensa y muy completa monografía "La Enfermedad de Nicolas Favre o Cuarta Enfermedad Venérea." en que realiza un estudio de conjunto de la nueva enfermedad en todas sus manifestaciones.

En la actualidad Domingo Luciani, Baquero Gonzalez, Perez Carreño, Ottolina, y otros se ocupan del problema quirúrgico de las estrecheces rectales y sabemos existen interesantes trabajos en preparación. Valencia Parpacen prepara un bien documentado trabajo sobre las Rectitis agudas y Borjas estudia las localizaciones urinarias de le Enfermedad de Nicolas Favre. Está en prensa para ser publicado en el American Journal of Tropical Medicine un trabajo de Carlos Ottolina (La Reacción Vesicular Método para el diagnóstico de la infección por virus poradénico); en que se investiga la virulencia y el poder antigénico del líquido céfalo raquídeo concentrado en el vacío; habiendose podido obtener de manera sistemática y exclusiva con su empleo por vía intradérmica una reacción vesicular característica en enfermos portadores de lesiones clínicamente linfogranulomatosas con reacción de Frei positiva.

Las localizationes ano recto cólicas del virus poradenico

La porcion inferior del tubo digestivo ano recto sigmoide es sitio de predilección para las localizaciones del virus poradénico que bajo la forma de procesos agudos o crónicos forman parte fundamental del rico complejo sintomatico de la llamada Enfermedad de Nicolas Favre Tales localizaciones han adquirido tal importancia en los ultimos tiempos que constituyen un capitulo nuevo de la Patologia intestinal y los problemas terapeuticos que presentan abren nuevos horizontes a la cirugía del recto Frecuentemente observadas en nuestro pais las Proctitis poradenicas han sido ampliamente estudiadas por nuestros cirujanos desde el punto de vista clinico, anatomopatológico y terapeutico y en esta comunicación, despues de revisar alrededor de 250 historias clínicas de los archivos del Hospital Vargas y algunos mas de nuestra clientela particular, pretendemos exponer resumiéndola los resultados de nuestra experiencia controlada y completada con la experiencia de los otros cirujanos de nuestro primer Hospital

Rectitis agudas, Rectitis crónicas simples y Rectitis crónicas con estenosis son las tres pricipales formas clínicas que hemos observado

Las Rectitis agudas han sido las menos bien estudiadas y son sinembargo a nuestro entender las mas interesantes desde el punto de vista diagnóstico, pues representan formas de comienzo o de invasión resultantes de la inoculación directa de la mucosa rectal por el virus como consecuencia de la sodomía pasiva o de la contaminación con objetos infectados El diagnóstico precoz de estas rectitis agudas es de capital importancia para el porvenir del paciente ya que ellas se muestran sensibles a los tratamientos apropiados y creemos que tratadas precoz e intensamente curan, evitando la evolución hacia las formas crónicas mucho mas graves Pensamos que en toda Rectitis aguda debe considerarse la posibilidad de un origen linfogranulomatoso y que en consecuencia deben practicarse reacciones de Frei en serie y hasta instituirse en los casos dudosos un tratamiento intensivo antimonial y sulfamídico de prueba Los enfermos que han sufrido rectitis aguda con Frei positiva deben ser sometidos a una vigilancia rigurosa y a examenes recto sigmoidescópicos a intervalos regulares

Las Rectitis agudas formas de invasión de la Enfermedad de Nicolas Favre, han sido admitidas por Rachet, Cachera, Moutier, Lambling y otros

Personalmente hemos tenido ocación de observar algunos casos típicos entre los cuales hay uno de doble infección simultanea, sifilitica y poradénica citada en la Tesis de nuestro distinguido discípulo Rodriguez Diaz Un compatriota Valencia Parpacen prepara en la actualidad un interesante trabajo con rica documentación clínica e interesantes observaciones endoscópicas en el cual describe así el aspecto observado en las Proctitis agudas poradénicas a la anuscopia se aprecia la mucosa roja sangrante, cubierta de secresiones con o sin aspecto difteroide

A la proctuscopia se comprueba una mucosa rectal rojo vivo sangrante equímótico cubierta de moco y pus, en veces da la impresion de estar como cortada en varios sitios en sentido paralelo a la luz intestinal, estas hendiduras pueden ser en número de 3 a 5 y dan el aspecto de un pedazo de carne cortada en puntos equidistantes y en una misma dirección

Las lesiones rectoscópicas caracteristicas de las Rectitis poradenicas serian la reunion en una misma zona de lesiones de aspecto maculoso, papuloso y vesiculoso Las vesículas son de tamaño variable cabeza de alfiler, grano de arroz o lenteja, contienen un líquido amarillento de aspecto purulento, estan rodeadas de un halo rojo de bordes regulares y pueden ulcerarse Alrededor de las vesículas pueden verse membranas blanco grisáseas teñidas con sangre Valencia Parpacen no ha encontrado estas lesiones en otras Rectitis

Rectitis Cronicas Sin Estenosis

Estas son la secuela natural de las formas agudas no tratadas, pero pueden tambien instalarse solapadamente sin que sea posible en el interrogatorio evidenciar la etapa aguda del comienzo son formas relativamente nuevas de la enfermedad y se manifiestan clinicamente por dolores contínuos en la region ano perineal con tenesmo rectal, y flujos glerosos, muco purulentos y veces hemorrá gicos. Tienen períodos de exacerbación que alternan con épocas de acalmia y alternativas de *constipación y crisis diarréicas. El tacto* rectal es muy doloroso, el esfinter se muestra contraído espasmódicamente, no se aprecia estrechamiento de la luz intestinal y en la pared pueden apreciarse granulaciones, excrecencias poliposas y zonas induradas. La pared intestinal está elástica y no se aprecia peri-rectitis.

A la rectoscopia pueden apreciarse A. Congestiones localizadas o difusas con edemas y erociones. B. Ulceraciones superficiales o profundas de todos los tamaños limpias o cubiertas de sangre, moco, pus o membranas. C. Infiltraciones D. Vegetaciones. y C. Cicatrices; todas estas lesiones se asocian en forma variable dando un gran polimorfismo a las imágenes rectoscópicas.

Las Rectitis crónicas con estenosis son las formas clínicas mas frecuentemente observadas y sin duda las mas graves. En los archivos hospitalarios se revela que eran observadas aunque no con tanta frecuencia como ahora en épocas anteriores, se les prestaba poca atención, hasta 1932, en que la Tesis de Vizcarrondo puso en evidencia que mas del 90%. estaban relacionadas con el proceso linfogranulomatoso.

FRECUENCIA SEGUN EL SEXO

Las estrecheces rectales son mas frecuentes en la mujer que en el hombre. Santeliz en 100 casos encuentra mujeres 64; y hombres 36.

Nosotros en 38 casos quirúrgicos, notamos mujeres 32; y hombres 6. Estos datos estan de acuerdo con lo admitido por la mayoría de los autores extrangeros.

EDAD

No hemos observado Rectitis estenosantes en menores de 15 años, ni en mayores de 70. El mayor número de casos estan comprendidos entre 20 y 30.

RAZA Y COLOR

No hemos observado que el factor raza o color influya en la frecuencia de la enfermedad.

CLASE SOCIAL

El mayor número de casos de estrecheces rectales se observa en la clientela hospitalaria, en la clase social baja, mal nutrida y sin nociones de higiene, que consultan tarde. En clientela privada los casos de estrechez rectal son sin duda menores, con mayor frecuencia vemos en este tipo de clientes Rectitis agudas o crónicas que son sin duda formas relativamente recientes de la enfermedad. Prostitutas y pederastas *pagan un fuerte tributo* a esta enojosa y grave localización del virus poradénico.

POLINFECCION VENEREA

La mayor parte de los casos estudiados son de polinfección venérea. Historia de blenorragias, chancros, adenopatías y reacciones serológicas positivas para la *sífilis; y no dudamos* que esta polinfección juegue un papel en la etiopatogenia de las lesiones. Hemos *tenido la ocasión* de comprobar un caso de cuádruple infección venérea en un joven de 16 años. El granuloma venéreo se añade y complica a veces las lesiones perianales y perineales. Lo hemos visto en cuatro ocasiones, su sitio perianal da al cicatrizar origen a estrecheces anales muy cerrades.

SINDROME ANO-RECTO-PERINEO-GENITAL

Las Rectitis estenosantes van accompañadas en un cierto número de casos de otras localizaciones *del virus en la esfera perineo-genital,* dando origen a un complejo sintomático en que a las lesiones rectales se asocian lesiones variadas de naturaleza edematosas, ulcerosas, esclerosantes, tumorales, fistulosas y elefanciásicas de localización perianal, tegumentos del periné, genitales externos vulva, vagina y uretra y que han sido descritos con el nombre de Síndrome anorectoperineo genitales por Jersild. En mas del 70%. las lesiones son puramente rectales; en mas de un 20%. hay localizaciones perineogenitales asociadas; y solo en un porcentage muy pequeño 3 a 5 por %. hemos visto lesiones genitourinarias puras sin lesion rectal.

RELACION CON EL CANCER

Es posible y ha sido descrito el desarrollo del cáncer sobre lesiones rectales de Nicolas Favre, sinembargo no hemos observado ningun caso clínico ni hay ninguna observación en los archivos de Anatomía Patológica.

CLINICA

Los casos estudiados por nosotros presentan un cuadro clinico bastante caracteristico que podemos sintetizar describiendo sus signos locales y sus signos generales

SIGNOS LOCALES

Funcionalmente los enfermos presentan sintomas de Rectitis cronica asociados a síntomas de estrechez rectal hay *dolor, tenesmo,* flujo mucopurulento y a veces hemorragico, constipacion tenaz alternado con crisis diarreica, dificultad mas o menos grande en la defecacion y heces acintadas Algunos presentan a intervalos regulares crisis pseudo oclusivas y aunque ha sido negado por algunos hemos visto casos complicarse de un cuadro *obstructivo agudo*

A la inspección la region anal se presenta normal en algunos casos, en otros hay lesiones de anitis proliferante con presencia de mamelones inflamatorio de aspecto condilomatoso o de anitis ulcerativa

La region perianal es frecuentemente el asiento de lesiones edematosas cronicas a veces de aspecto elefanciasico en cuya superficie se abren los orificios de trayectos fistulosos mas o menos complejo

Al tacto rectal se percibe la estrechez característica de calibre variable que deja a veces pasar solo una bujía 9 y en otras ocasiones es permeable al indice, esta estrechez es baja entre 2 y 6 cts por encima del ano, en forma de embudo invertido, ocupa toda la circunferencia del intestino, la mucosa esta a veces lisa, dura cicatricial y otras veces es rugosa e irregular cubierta de mamelones que sangran

Las paredes rectales han perdido su elasticidad, su movilidad, estan engrosadas y se percibe el bloque de perirectitis

En algunos casos avanzados hay abcesos perirectales que se abren en la zona perianal y múltiples fistulas que algunas veces hacen comunicar el recto con la vagina

SINTOMAS GENERALES Sólo en las formas recientes, mientras la estrechez no es muy cerrada ni existen complicaciones infecciosas perirectales, se mantiene intacto el estado general Con los progresos de la estrechez y el desarrollo de procesos supurativos en el perirecto y lesiones ulcerosas y supurativas en la mucosa por encima de la estrechez, se establece una gran toxemia que unida a la stercoremia y a la toxicidad propia de las lesiones poradenicas hacen declinar rapidamente la salud del enfermo Perdida del peso y las fuerzas, anemia marcada, inapetencia, decadencia organica evidente, unidas a los sufrimientos locales y a una profunda depresion moral dan a estos pacientes un lamentable aspecto de caquexia y son faciles presas de las enfermedades intercurrentes La tuberculosis, las broncopneumonias las pielonefritis, son causas frecuentes de la muerte cuando no viene una complicación local perforacion con peritonitis u oclusión aguda a poner fin a tan lamentable estado

RECTO SYGMOIDOSCOPIA Esta *importante exploración debe practicarse cada* vez que sea posible, si se logra la dilatacion previa es a veces posible introducir un rectosygmoidoscopio de niños, muy alto en el sygmoide la mucosa está habitualmente sana y se deja distender, retirando el aparato se llega a la zona supra estrictural donde hay frecuentemente acúmulo de pus y sangre y la mucosa presenta lesiones ulcerosas y equimóticas, luego se cae en el tubo rígido inextensible de la estrechez sembrado comunmente de excrecencias poliposas que sangran con facilidad

SIGNOS RADIOLOGICOS

La exploración Radiológica por lavado opaco del recto y el colon suministra en las estrecheces rectales de origen poradénico figuras bastante caracteristicas hasta tal punto que de acuerdo con la opinion de P Gonzalez Rincones Prof de Electro Radiologia y C Ottolina Jefe del Servicio de Gastro Enterologia del Hospital Vargas puede hablarse de un Sindrome radiológico de las estrecheces poradenicas

La tecnica empleada es el enema opaco con emulsion de sulfato de bario puro (lechada clara con 150 grs por litro) a traves de una zonda de Nelaton No 24 y con presion no mayor de un metro Se practica el examen bajo control radioscópico tomando films cuando se observa algun aspecto interesante, valiendose del selector de Albrech provisto de *rejilla antidifusora (Gonzalez* [illegible],) caracteres mas constantes observados en las imágenes radiológicas de este tipo de estrecheces son: 1. Estrecheces generalmente *bajas* de sitio rectal comenzando a pocos centímetros del ano. 2. *largas* y continuas entre 6 y 15 centímetros. 3. aspecto *tubular.* Excepcionalmente las estrecheces alcanzan el sigmoide y mas raro aún el descendente y pueden presentarse zonas estrechas aisladas en estos 2 últimos segmentos intestinales separadas de la estrechez rectal principal por segmentos de mucosa sana. Con lo que respecta a las estrecheces segmentarias aisladas sigmoidianas o cólicas no parecen corresponder a las características radiológicas de las estrecheces linfogranulomatosas.

La ampolla rectal desaparece o no se forma y las paredes rectales se muestran inextensibles, debido principalmente a la fuerte perirectitis esclerosa. Hay ausensia de pliegues aunque algunas veces despues de la evacuación es posible ver pliegues verticales y areolas que corresponden a pliegues conservados de la mucosa y a formaciones papilomatosas. (Ottolina) Gonzalez Rincones describe así el aspecto radioscópico durante el lavado opaco: la pared rectal inextensible se adosa a la sonda Nelaton. desaparecen las válvulas de Huston y el enema corre a traves del recto sin distenderlo y llega a la S ilíaca dando la impresión de que la sonda llegara hasta esta region; es algo parecido a lo que pasa en la linitis gástrica cuando la comida opaca pasa del esófago al intestino a traves del estómago inextensible. Generalmente hay regularidad en el contorno de las figures. Algunas veces es posible ver trayectos fistulosos mas o menos complejos que comunican el recto con los órganos vecinos o la piel del periné.

ANATOMIA PATOLOGICA

Los datos anatomopatológicos de esta importante y grave forma de Rectitis nos han sido suministrados por el Profesor Rudolf Jaffé del Departamento de Anatomía Patológica del Hospital Vargas de Caracas, basados en el examen de 64 rectos de los cuales 37 corresponden a casos autopsiados y 27 a piezas extirpadas quirúrgicamente.

De los 37 casos autopsiados 12 murieron por causa de la enfermedad misma caquexia y anemia, 14 por complicaciones de la enfermedad repartidos así: Peritonitis 7 casos, Broncopneumonías 3 y Pielonefritis 4.

En los restantes 7 casos la causa de la muerte fué diferente de la enfermedad que estudiamos y las lesiones rectales fueron un hallazgo de la autopsia.

De los 37 casos autopsiados 30 fuéron mujeres y 7 hombres. La relación con la edad está expuesta en el siguiente cuadro.

Edad.	16-20	21-30	31-40	41-50	51-60	61-70
Casos.	4	18	7	5	1	2

En 26 veces las lesiones estaban limitadas al recto, 7 veces alcanzaron el comienzo del sygmoide y en 4 veces llegaron hasta la parte alta de la S ilíaca. No hubo casos de localizaciones mas altas.

Localizaciones altas en el descendente y en el transverso han sido descritas y en Venezuela conocemos un caso de Luciani y otro de Córdoba.

Las estrecheces altas corresponden frecuentemente a la bilharziosis que muy frecuentemente se asocia en nuestros enfermos a las lesiones linfogranulomatosas. Hemos operado 2 *casos: uno de un tumor* estenosante del colon descendente en el que practicamos una Colectomía parcial, y en el cual aún cuando tenía Frei fuertemente positivo y lesiones rectales el examen de la pieza reveló alteraciones claramente de origen bilharziano. El otro fué una extirpación abdomino-perineal del recto por Rectitis estenosante grave que al examen anatomopatológico reveló una asociación Bilharzia- Nicolas Favre.

Jaffé describe así el aspecto macroscópico de las lesiones rectales poradénicas: El recto está transformado en un tubo duro, la estrechez mide a veces hasta 20 cts. y es tan cerrada que no admite el paso de las tijeras, es muy dura y fijada por fuertes adherencias a la pelvis ósea, los tejidos perirectales forman una masa dura adherente al hueso y la extirpación se efectúa con grandes dificultades teniendo que seccionarlo centímetro a centímetro con el cuchillo.

La mucosa *falta generalmente* al nivel de la estrechez, o quedan solamente islotes aislados con formaciones hiperplásicas pseudopoliposas. El Límite de las lesiones es brusca pero en línea ondulada y las lesiones perirectales no sobrepasan las de la mucosa.

En un corte transversal se ve en el lugar de la mucosa un tejido blanco opaco de un grosor de un milímetro hasta un centímetro o más y penetrando de allí hasta el tejido pélvico en forma de filas finas muchas veces como una red o tambien con filas mas anchas. Este tejido fibroso ha sustituido muchas veces *en gran extensión el tejido grasoso de la* pelvis.

Contemplando este tejido neoformado dura que ha sustituido la pared rectal e infiltrado toda la pelvis no se comprende como puede existir medicamento capaz de curarlo ni procedimientos capaces de dilatar tales estrecheces.

TRATAMIENTO DE LAS LOCALIZACIONES ANO-RECTALES DE LA ENFERMEDAD DE NICOLAS FAVRE

Consideraremos el tratamiento en las tres formas clínicas descritas: 1. Formas agudas: Es en estas formas que los tratamientos médicos proporcionan sus mejores resultados: *Antimoniales y Sulfamidados asociados a* tratamientos locales y tónicos generales dan excelentes efectos.

Entre los antimoniales hemos empleado: el emético por vía venosa en solución al 1 %. a dosis progresivamenta crecientes hasta alcanzar 0.05 centígramos por dosis en serie de 25 inyecciones; y debemos confesar estar satisfechos de su empleo. Tambien hemos usado otros derivados antimoniales como la Fuadina y la Anthiomalina. Simultáneamente o en curas alternas indicamos la Sulfanilamida ó uno de sus derivados, especialmente hemos ensayado el Prontosil, el Solfanil y ultimamente el Sulfatiazol, producto éste último muy activo y bastante bien tolerado que recomendamos a la dosis de 4 gramos diarios en curas alternas que alcanzan cada una 20 grs.

El tratamiento local que recomendamos consiste en lavados previo enema evacuador y con el anuscópio con soluciónes de Rivanol al 1 %., Fuschina de Ziehl Lugol. Sulfanilamida, etc.

El extracto hepático, el calcio y las vitaminas completan las indicaciones. No tenemos un concepto preciso de cuan largo debe ser este tratamiento y no sabemos exactamente por cuanto tiempo debe ser continuado despues de la desaparición de las lesiones. Creemos sinembargo que debe ser prolongado por algunos meses pues hemos visto recidivas y sugerimos que dichos enfermos sean sometidos a controles recto-sygmoidoscópicos a intervalos regulares.

Las Rectitis crónicas sin estrecheces merecen un *tratamiento similar* con la particularidad *de que reacionan menos bien a los medi*camentos, y requieren tratamientos locales más enérgicos. Algunas formas se muestran muy rebeldes pues las mejorías son transitorias. Son necesarias a veces pequeñas intervenciones endoscópicas como cauterizaciones y extirpación de pólipos.

En las Rectitis crónicas proliferantes y estenosantes somos pesimistas en lo referente a la acción curativa de los tratamientos generales y locales de que hemos hablado; tenemos la impresión de que en general tienen una grave tendencia evolutiva que dificilmente es modificada por los tratamientos mas enérgicos y mejor dirijidos. No dudamos que en formas *muy recientes, con estenosis poco cerradas* escasa perirectitis infección secundaria discreta y buenas defenzas orgánicas sea posible mejorar el estado local, atenuar la infección secundaria a expensas de un tratamiento enérgico, cuidadoso y prolongado muy largo tiempo sumado a una rigurosa higiene general. Pero en las formas avanzadas tal como las observamos en nuestros servicios hospitalarios, según no los demuestra la experiencia clínica de largos años de observación y en presencia de la magnitud de las lesiones reveladas en las mesa operatoria y la sala de autopsias, consideramos que no existe ningun medicamento capaz de curar, ni ningun procedimiento capaz de dilatar esos rectos de mucosa y calibre practicamente desaparecidos cuyas paredes quedaron ahogados en un magma de esclerosis de algunos centímetros de espesor adherente a los órganos y formaciones óseas vecinas en cuyo seno se albergan abcesos y complejos trayectos fistulosos.

Las dilataciones diatérmicas asociadas a la medicación sulfamídica mejoran sin duda las formas menos graves; los dolores se atenúan. las supuraciones dismi
parece y algunas fístul
tela privada tenemos a
tienen hace años esta
untratamiento largo, c

cual son esclavos por vida. Pero hasta la fecha no contamos con ninguna curación.

Durante años hemos ensayado contra estas rebeldes Rectitis crónicas estenosantes los mas variados tratamientos: quimoterapia a base de antimoniales, iódicos, salicilados, sales de oro, sulfamídicos; vacunas, antigenoterapia, dilataciones diatérmicas, Radioterapia y hasta intervenciones de limpieza local, como abertura de abcesos, extirpación de pólipos, debridamiento de fístulas, etc.

En la mayoría de los casos los resultados han sido escasos y dificilmente mantenidos, todo lo cual nos ha llevado al convencimiento de que son necesarias medidas mas radicales y en la actualidad tenemos la convicción de que la única solución capaz de mejorar el precario estado general y de modificar muy favorablemente tales lesiones locales es la realización de una *Colostomía* que segun la experiencia de la mayoría de nuestros cirujanos y la nuestra propia debe ser *definitiva* pues no le atribuimos facultades curativas suficientes como para abrigar la menor esperanza respecto a un posible cierre del ano artificial con restablecimiento del tractus intestinal normal.

Este criterio un tanto radical de la Colostomía definitiva es la resultante lógica de la experiencia clínica y de los estudios anatomopatológicos de las lesiones. Todos los casos que conocemos de colostomías temporarias que han sido cerradas al considerar curadas las lesiones infrayacentes han resultado un rotundo fracaso pues las lesiones se han reproducido, por lo menos en los casos de verdaderas Rectitis estenosantes a virus poradénico ya que los casos evolucionan muy distintamente cuando las lesiones son de otra naturaleza hasta el punto de que en nuestra convicción negamos la naturaleza linfogranulomatosa a las lesiones rectales que curan rápida y completamente bajo la acción benefactora de un ano artificial temporal. Por lo que respecta a la Anatomía Patológica, la magnitud y extension de las lesiones observadas en los casos avanzados nos obliga a no admitir la posibilidad de una restitución anatómica y funcional de un órgano tan profundamente lesionado cuya estructura ha sido definitivamente sustituida por un tejido fibroso de nueva formación.

La Colostomía definitiva es pues para nosotros el tratamiento de elección de las Rectitis estenosantes y proliferantes a virus poradénico llegadas a su grado avanzado de su evolución; bajo su influencia el estado general mejora de manera sorprendente, cesa la estercoremia, disminuye la toxi-infección crónica nacida en los focos de Rectitis y Perirectitis supurantes y fistulosos, mejora la anemia, renacen progresivamente el apetito y las fuerzas y se regularizan las demas funciones orgánicas y se asiste en poco tiempo a una sorprendente mejoría del paciente. Entretanto al entrar en reposo el segmento intestinal enfermo, atenúanse los sufrimientos, modifícanse favorablemente los focos infecciosos crónicos perirectales y supraestricturales que supuran menos y hasta dejan a veces definitivamente de supurar; las lesiones edematosas, ulcerosas y papilomatosas perianales se hacen menos dolorosas y disminuyen de tamaño, enfin nótase en un número considerable de casos una mejoría notable de las condiciones locales que sino representa una curación absoluta, eventualidad que nunca hemos visto, a lo menos representa un gran mejoramiento del estado del paciente compatible con una vida bastante normal y sin sufrimientos.

Sinembargo la mejoría de las condiciones locales no siempre va de acuerdo con el mejoramiento del estado general que si es siempre constante. Un cierto número de enfermos despues de un año o mas de llevar su ano artificial definitivo regresan quejándose de no haber obtenido el beneficio local esperado y examinados obsérvase en realidad que existe abundante supuración rectal, que muchos trayectos fistulosos no se han cerrado y que aún se han formado otros nuevos; pruebas evidentes de que las lesiones no solo no mejoraron con la Colostomía sino que continuaron a evolucionar; son éstos generalmente enfermos que no se sometieron despues de la Colostomía a un tratamiento local y general que consideramos de rigor y algunas veces basta con instituirlo rigurosamente para que todo entre en orden. A pesar de todo algunos casos no mejoran y hemos tenido por lo menos 6 en tales circunstancias, las lesiones se muestran rebeldes a todas las terapéuticas y los desgraciados enfermos exigen se les libere por cualquier medio de tan lamentable estado. Es entonces que creemos llegado el momento de recurrir a una cirugía radical, a la extirpación del segmento intestinal enfermo con todos los tejidos esclerosos e infectados que lo rodean; eso sí de una cirugía amplia y generosa que soprepase en todos sentidos los límites de las lesiones tan radical como la empleada contra el cáncer del recto, por ser a nuestro entender la única capaz de asegurar una curación definitiva. Creemos que el descrédito en que ha caído la cirugía del recto en las lesiones linfogranulomatosas entre algunos autores es debido al empleo de técnicas timoratas, económicas que aspiran inutilmente a curar conservando el esfinter o realizando resecciones parciales e incompletas que dejan tejidos enfermos origen de futuras recidivas. Resumiendo aconsejamos en las rectitis crónicas estenosantes graves, debidamente diagnosticadas y estudiadas clínica, endoscópica y radiológicamente. 1 %. el establecimiento de una colostomía definitiva seguida de un riguroso tratamiento general a base de derivados sulfamídicos y local bajo forma de lavados, tocamientos, cauterizaciones y pequeñas operaciones de limpieza, continuados por largo tiempo; y 2. si no obstante, las condiciones locales no mejoran suficientemente: la extirpación amplia y radical del segmento enfermo y los tejidos que lo rodean.

Debemos ahora hacer algunas consideraciones sobre la colostomía definitiva y sobre el tipo de extirpación rectal a practicar y la vía a seguir. En lo referente a la Colostomía consideraremos el sitio y el tipo.

Con lo que respecta al sitio y si tomamos en consideración la topografía habitual de las lesiones que es el recto, deberíamos colocarla en el asa sygmoide que es el sitio de elección de los anos ilíacos izquierdos y así lo realizaron en sus primeros casos la mayor parte de nuestros cirujanos y lo realizan todavía algunos. Sinembargo las publicaciones referentes a localizaciones en el asa omega y aún mas altas no son raras (Dimitri, Stoia, Falconer, Moulongert, Kase Bloch y Zagdoun).

Entre nosotros Jaffé encuentra en 37 casos autopsiados que 7 veces las lesiones alcanzaron el comienzo del sygmoide y 4 veces llegan hasta su parte mas elevada. Por otra parte Perez Carreño pretende haber observado 3 casos de invasion de la boca de colostomía sobre el sygmoide por las lesiones poradénicas de los cuales uno por lo menos mostró lesiones anatomopatológicas características; y D. Luciani Profesor de Clínica Quirúrgica presentó una observación irrefutable de lesion estenosante alta, casi en el comienzo del descendente en un enfermo con Frei positivo y lesiones rectales. Tales hechos obligan a considerar imprudente la colocación sistemática y rutinaria del ano artificial en la S ilíaca y han conducido a algunos a elegir el transverso (Luciani) o el descendente (Perez Carreño, Baquero y nosotros mismos) como el sitio de elección. Creemos que la elección del sitio de la Colostomía depende del estudio radiológico y sobre todo de la amplia revision del colon por laparotomía exploradora. Preferimos en todo caso el fin del colon descendente y no tiene nuestro favor su sitio en el colon transverso por las frecuentes diarreas y mala continencia que cõn el hemos observado a mas de su incomodidad para el paciente.

En 74 Colostomías revisadas 19 veces se hizo en el descendente y 14 en el colon transverso y 41 en el colon sygmoideo. En estas 74 colostomías hubo 6 muertes todas en el período postoperatorio y debidas al precario estado general en que estaban los pacientes. Con lo que respecta al tipo de colostomía observamos que es el clásico ano con puente cutáneo el mas frecuentemente empleado en nuestro país; fué el empleado en los primeros casos y el que todavía prefieren algunos (Luciani, Blanco Gásperi) aunque le concedemos ventajas como la de ser de fácil ejecución y la de permitir los lavados del cabo distal lo empleamos poco porque se complica frecuentemente de prolapso y porque no proporciona la continencia a que aspiramos para nuestros enfermos.

Perez Carreño ha ideado un tipo de colostomía definitiva que realiza con un asa corta adosada por sus bordes y que hace cabalgar sobre los planos musculo aponeuróticos de la herida dándole así un doble espolon, la boca se hace en el sentido de la luz intestinal. Lo hemos realizado siguiendo su técnica y es sin duda muy estético y bastante continente al comienzo, sinembargo tenemos la impresion de que su valor como colostomía definitiva va perdiendo eficacia con el tiempo y las materias comienzan a pasar por el cabo distal. Por otra parte por su pequeño espolon y su abertura segun la luz intestinal es facil de cerrar.

Creemos que si a un enfermo ha de condenarsele a soportar definitivamente un ano contra natura es indispensable que dicho ano artificial sea lo mas estético lo mas cómodo, lo mas continente y lo mas aseado posible.

Sin duda la continencia es el problema fundamental, y creemos que esa continencia para satisfacer al paciente debe ser absoluta es decir que en ninguna circunstancia, sean cuales fueren la consistencia de la materia y el estado del peristaltismo permita el escape involuntario de las materias y los gases; es lo que nosotros llamamos la continencia social que permita al enfermo sin temores dedicarse activamente a su vida social y deportiva. Tal tipo de continencia está ampliamente demostrado por la experiencia no puede ser proporcionado por ninguna de las maniobras ideadas, tales como torcion del cabo sobre su eje, paso a traves de los haces musculares, paso por un tunel sub-cutáneo tenemos la convicción de que tal tipo de continencia solo puede ser proporcionada por dispositivos mecánicos que regulen la abertura o el cierre del cabo intestinal abocado a la piel. El paso del cabo intestinal entre un túnel cutáneo y la piel permitiendo la aplicación de una pinza u otro dispositivo mecánico compresar es sin duda alguna la única solución del problema y es por eso que hemos elegido como procedimiento de colostomía definitiva el llamado ano Kurzahn Cuneo con las simplificaciones realizadas en su técnica por Corachán y Baquero. Se le critica a este procedimiento el de ser de técnica delicada de exponer al esfacelo del cabo superior, y al estallamiento del cabo inferior cerrado y hundido en el abdomen y de dificil drenaje, admitiendo las críticas debemos confesar que hasta la fecha no hemos tenido que lamentar ninguna de tales complicaciones.

Y abordamos ahora el problema de las extirpaciones rectales. Creemos que todo lo antes expuesto en relación con la gravedad y extensión de las lesiones y la rebeldía de sus síntomas autoriza la indicación de una extirpación del órgano enfermo en los casos afortunadamente no muy frecuentes (20 por 100) en nuestra estadística en que la Colostomía no proporciona la mejoría esperada. Nuestro criterio al respecto no es demasiado radical; creemos que en la mayoría de los casos la Colostomía proporciona una mejoría tal de las lesiones y una desaparición tan completa de los principales síntomas que si no puede hablarse de curación absoluta sí puede considerarse como una curación clínica compatible con una vida activa y sin sufrimientos. La indicación de la extirpación radical está en el fracaso del ano contra natura. Sinembargo no debe esperarse demasiado y no debe dejarse perder el amplio beneficio que sobre el estado general ejerce la derivación de las materias fecales; la extirpación no debe hacerse ni demasiado pronto, antes de que los resultados favorables de la Colostomía se hagan evidentes, ni demasiado tarde es decir cuando el estado general comienza a decaer de nuevo. En 75 Colostomías revisadas solo en 15 casos se practicó posteriormente la extirpación del recto la que da una cifra algo mayor del 20 por 100.

La extirpación rectal en las Rectitis estenosantes poradénicas es una operación grave que da una elevada mortalidad en 15 casos estudiados hay 4 muertes, 26, 6%; de las cuales 3 corresponden a la vía abdominoperineal y uno a la vía posterior tras sacra.

Las primeras extirpaciones rectales practicadas en nuestro país por esta enfermedad fueron extirpaciones conservadoras, timoratas, económicas por vía perineal y tratando de conservar el esfinter; de exito inmediato su fracaso se reveló en los años sucesivos por reproducción de las lesiones in situ. Blanco Gásperi ensayó extirpaciones perineales parciales con descenso del recto y conservación del esfinter pero no tenemos datos exactos sobre los resultados lejanos. Mas tarde Perez Carreño inició una cirugía mas amplia practicando por vía perineal extirpaciones extensas y altas sin pretender la conservación del esfinter con Colostomía previa. El segmento cólico comprendido entre la Colostomía y el sitio de la extirpación no proporcionó molestias; despues la cirugía se ha hecho mas radical y mas atrevida, el mejor conocimiento de las lesiones anatomopatológicas y la posibilidad de su extension hasta la parte alta del sygmoide han conducido a un gran número de nuestro cirujanos a emplear la vía mas amplia y el procedimiento mas radical, me refiero a la extirpacion abdominoperineal en un tiempo previa Colostomía Corachan, Baquero, Luciani, Ottolina, Borjas

La evidente elevada mortalidad de la vía abdomino perineal en las extirpaciones del recto en enfermos con Rectitis crónicas estenosantes poradenicas que por lo comun ofrecen poca resistencia organica y llegan al acto operatorio debilitados por la anemia y la infección nos condujo a ensallar la vía dorsal tras sacro tipo Kraske con establecimiento de un ano sacro La intervención practicada con anestesia raquídea y con bisturí electrico es bastante bien tolerada permite una extirpación extensa en amplitud y altura y sus resultados lejanos se han mostrado satisfactorios ya que 2 de nuestras operadas se encuentran despues de 3 años en exelentes condiciones locales y generales revelando, a los frecuentes controles clínicos radiológicos y endoscópicos una absoluta y definitiva curación de las lesiones El ano sacro, tan criticado por algunos ha funcionado bastante bien con aceptable continencia en nuestros enfermos Psíquicamente es mejor tolerado que el ano abdominal, siendo su principal defecto su dificil cuido y aseo

Resumimos a continuacion las 2 observaciones mas antiguas de nuestros casos operados por via dorsal tras sacra con establecimiento de un ano sacro Observación No 1 1937 Mujer de 29 años Antecedentes venéreos cargados Blenorragia, chancros, adenopatías inguinales, Lues Desde hace 7 años Rectitis crónica progresivamente estenosante y desarrollo progresivo de lesiones ulcerosas y edematosas perineo genitales

Al examen clínico Síndrome—ano—recto perineal de Jersild Rectitis crónica proliferante y estenosante, vegetaciones condilomatosas perianales y perineales edema crónico e hipertrofia elefantiásica de los genitales externos, ulceración perimeática excrecencias poliposas endouretrales Trigonitis Al examen rectoscópico mucosa granulosa y ulcerada, estrechez cerrada y extensa a 4 cts del ano reacción de Frei fuertemente postiva Enferma anemiada, enflaquecida amenorreica, con crisis pseudo oclusivas a repetición

Esta enferma ha sido ya sometida a tratamientos locales y generales sin resultado Eméticos, Sulfanilamida y dilataciones diatermicas

TRATAMIENTO QUIRURGICO 1 Extirpación de los grandes labios y toilet perineo genital 2 Colostomía en el colon transverso tipo Perez Carreño por crisis pseudo oclusivas agudas La enferma mejoro notablemente en su estado general y algo en el local y durante casi un año fue sometida en el Servicio a un riguroso tratamiento durante el cual se ensalaron los iódicos, los antimoniales, la sulfamida y sus derivados y se continuaron las dilataciones diatermicas y los tocamientos locales Despues de un año de tratamientos infructuosos y en vista de que el recto sigue supurando la enferma sufre y se forman abcesos y fistulas perianales, se practica una extirpación del recto muy amplia y muy alta descendiendo el sigmoide para establecer un ano sacro, la operación se realiza con anestesia raquídea y con bisturí electrico Buena evolución post operatoria En 1938 abandonó el Servicio en exelentes condiciones, satisfecha del funcionamiento de su ano sacro despues del cierre de su Colostomía en el transverso Los controles sucesivos clinicos, radiológicos y endoscópicos, realizados cada 6 meses hasta la fecha revela una perfecta y definitiva curación El examen anatomopatológico de la pieza extirpada reveló lesiones inflamatorias crónicas del tipo Nicolas Favre

Observación No 2 1938 Revela al examen un Sindrome grave ano recto perineo de Jersild vegetaciones condilamatosas en la horquilla vulvar, hipertrofia elefantiasica del labio mayor izquierdo y clítoris, supuración rectal, mamelones elefantiacos cubriendo la margen del ano

El tacto rectal muy doloroso, pone de manifiesto inmediatamente por encima del reborde anal, una mucosa, como granulosa y a unos 5 centímetros una estrechez infranqueable, que solo permite la entrada del extremo del índice Introduciendo bujías de Hager la número 10 pasa con dificultad Rectoscopia Se introdujo el aparato hasta 20 cm previa dilatación de la estrechez A este nivel se encontró una mucosa de aspecto normal, permitiendo las paredes del intestino un facil desplazamiento del pico del instrumento Se fué retirando el aparato y al
cm se observó una zona inflam
con pus, a los 9 cm se ve

fact speaks against an exclusive traumatic genesis of this condition. It is hard to believe that small repeated traumata can lead to the rupture of the semilunar cartilage in the absence of any *pre-existing* pathologic changes. Further evidence against a purely traumatic etiology is the fact that in a series of cases, the condition is to be found on *both* knee-joints. I have observed this occurrence in approximately 8 per cent of my material. In numerous cases, there is undoubtedly a disposition to this disease. Such a disposition can be illustrated by the view that the articular bodies of the knee-joint in individuals living in mountainous country are differently formed from those of inhabitants in low country (Bircher, writing from Switzerland for instance). Occupations involving kneeling as well as repeated small traumata, are considered to be predisposing factors. (Turner, Mayo-Robson, Annandale, and others.)

All these may first cause the abovementioned pathologic changes in the tissue-structure, and later, lead to the rupture under usual forms.

At any rate, it should be noted that approximately *30 per cent* of the cases operated upon in my material lack the history of a severe trauma, such as might be responsible for a complete rupture of the cartilage. Even in most elaborate experiments on cadavers, it is impossible to bring about a rupture of the semilunar cartilage. All this convinces me more and more that most ruptures of the semilunar cartilage are *pathologic fractures*, analogous to pathologic fractures in bones in a diseased region. Likewise, these changes in the cartilagineous tissue seem to take place on the basis of pathologic processes (Steinman, Roux, and others), such as the above-mentioned, the final stage of which is then the rupture of the semilunar cartilage under its various forms.

DIFFERENCES EXISTING BETWEEN DISEASE OF THE MEDIAL AND LATERAL SEMILUNAR CARTILAGE

In my material, the rupture of the medial semilunar cartilage is eight times more frequent than that of the lateral semilunar cartilage.

On the other hand, large cysts of the semilunar cartilage and the "flying knee" in my material, as well as in the literature, are in the great majority of cases to be found in the *lateral* semilunar cartilage! This fact has been pointed out in various publications (Campbell and Mitchell, Ollerensha Pandalai, and others); the reasons for it, however, are not at all clear.

The frequency of rupture in the medial semilunar cartilage is being generally explained by the known fact that the conditions of its fixation to the capsule are different from those of the lateral semilunar cartilage. I do not wish to enter here in more detail on these well-known anatomic conditions, which, besides, I do not consider to be unobjectionable. Also, if we consider closely the conditions of vascular distribution, no major differences are to be found (Henschen) sufficient to explain this fact.

Furthermore, it should be pointed out that in cases of rupture of both semilunar cartilages we always find that the medial semilunar cartilage has been ruptured in both knee-joints.

Of importance, in my opinion, is the fact—which I have pointed out in 1927 *(Arch. klin. Chir.* 146)—that the medial semilunar cartilage shows the typical picture of connective tissue cartilage, while the lateral semilunar cartilage of the newborn corresponds to the hyaline type of cartilage. Although this difference tends to disappear in advanced age, I see in this congenital difference in structure the basis for the fact that, in later years, the medial semilunar cartilage is the seat of ruptures, while large cysts which may separate altogether from the capsule to form the "flying knee" are more frequently observed in the lateral semilunar cartilage.

Besides the rupture, both semilunar cartilages may be affected through chronic traumatic or degenerative conditions (*"Meniscite traumatique,"* Pauzat, Bonnet, Roux), and thus, lead in the final stage to certain separations which are similar to ruptures

DIAGNOSIS

The history and clinical findings are the most important signs of the disease, namely, the rupture of the semilunar cartilage. These are too well known to be repeated here. In the clinical examination, the so-calleld Bragard's sign seems to me to be of importance: the medial semilunar cartilage becomes more painful on palpation, the exact site of the articular space, flexing the knee-joint and simultaneouslly rotating the leg inwardly. The lateral semilunar cartilage becomes more clearly palpable, namely, more painful, on flexing and simultaneously rotating outwardly.

The x-ray examination with the aid of air or contrast filling, is in my opinion superfluous for the diagnosis. On the other hand, plain x-ray films may show in older persons a calcified or dislocated shadow in the articular space, which may facilitate the diagnosis. This is especially the case when the x-ray is taken in a 90° flexion of the knee-joint, and the central ray of the x-ray tube falls exactlly on the tuberculum intercondyloideum of the tibia.

I have never performed an arthroendoscopy (Bircher; Michael S. Burmann, New York).

The auscultation of the joint, which I have tried for a long time, did not markedly facilitate the diagnosis.

The various forms of tear of the semilunar cartilage can rarely be differentiated before operation. This is possible in some cases in which the rupture took place at the anterior insertion of the semilunar cartilage, which moves about freely in the articular space like a free body. It is more difficult to recognize the other forms of semilunar cartilage rupture (see Henderson).

Most frequent is the detachment at the anterior insertion and especially the "bucket handle" tear Less frequent are longitudinal tears and least common is the detachment at the posterior insertion. The two first-mentioned forms occur in approximately 70 per cent of cases and are the easiest to operate on.

Accompanying lesions of the knee-joint must be recognized, if possible, before operation, since these eventually may necessitate a change in the plan of operation and, furthermore, the prognosis will be different.

To-day, it is always possible to recognize lesions of the lateral ligaments and ruptures of the crucial ligaments by the abnormal movements in the knee-joint on *repeated* examination of the patient—exact observation and comparison with the healthy limb. Practice and keen observation will always prevent one from a faulty diagnosis in these cases.

Greater difficulties are, however, encountered in dealing with the various forms of chondropathia, cartilage necrosis. and arthritis, which often accompany rupture of the semilunar cartilage. Inflammation of the corpus adiposum, which so often is erroneously diagnosed, is very rare. This diagnosis is often resorted to when on operation [illegible] lunar c[illegible] is found in [illegible]

The history of the case is in itself easily sufficient to distinguish loose bodies in the articulation from a rupture of the semilunar cartilage. The x-ray film may be of assistance in case the loose body is calcified.

INDICATIONS AND TREATMENTS

The state of events described above leads sooner or later to the first derangement. I never operate immediately after this condition has taken place, because at this early stage the diagnosis is not yet clear and because the first derangement can always be repaired by itself or by certain manipulations. I refer in this respect to Charles Pannett. Besides, a derangement involving a serious hemorrhage should not be operated on for considerations of asepsis. Should, however, the derangement recur once or twice, or should the pain in the articular space persist for approximately two months, thus becoming a hindrance to work and movement, there is, in my opinion, an indication for operation. In the meantime, other possible causes for the pain or derangement may become clinically evident (gradual development of the signs of rupture of the crucial ligaments, etc.). In case of a sure diagnosis, advanced age is no contra-indication against operation. Claims for compensation are, in many cases, put forward only after operation. The results of operation seem thus to be unfavorably affected. This is, however, quite a false impression, and therefore, as is so often pointed out, no contra-indication against operation.

In case the semilunar cartilage is found to be ruptured, a conservative treatment is out of the question. It has never yet been proven that, for instance, a plaster cast, worn for from four to six weeks, can really bring about healing of a ruptured semilunar cartilage. This is also improbable from a pathologic point of view. Good results with a plaster cast may thus be obtained only in cases in which no rupture of the semilunar cartilage is present. On the other hand, it may seriously damage the muscles, especially in young persons, and lead to contractures which may necessitate a long treatment.

The only rational treatment in cases in which the diagnosis is certain is the operation.

REGENERATION OF THE SEMILUNAR CARTILAGE AND ITS CONSEQUENCES

As early as 1929, I was able to demonstrate that the removed semilunar cartilage regenerates. This I observed first in a case of rearthrotomy and later, in a postmortem finding of a patient who had been operated on for a rupture of the semilunar cartilage and three years later died from a duodenal cancer. In the meantime, similar regenerates have been observed by other authors (Friederich, M. Burman, and others) and it has been pointed out that in these cases we have before us a pseudo-regeneration, *i.e.*, after removal of a semilunar cartilage new tissue is formed in its place, consisting, however, not of hyaline cartliage but of connective tissue. The regenerated tissue is thus inferior to the original tissue removed. These findings are not only of interest to the pathologist, but are of importance for the clinician. The question thus arises: can such a regenerate become once more affected? Are such re-affections frequent when a disposition is pre-existent? Should all be done during the first operation to avoid, as far as possible, a regeneration? (This could be possible through an exact extirpation of the "zone of regeneration," *according to* Henschen.)

In fact, I have observed—and also reported on—some cases in which a new meniscus operation was necessary because the regenerate ruptured just as the original semilunar cartilage had done. It should, however, be pointed out that, in the large series of cases observed by me, this occurrence was very rare so that, practically, this uncommon and interesting process may be neglected. Among the hundreds of cases which I have followed up, in only six did a new rupture of the regenerate occur. We may thus overlook all precautionary procedures for an avoidance of formation of a regenerate. The discussion as to *extirpation* or *resection* of the semilunar cartilage thus becomes irrelevant.

REMARKS ON THE TECHNIC OF OPERATION

I have reported in detail on the technic, in a paper on 800 cases in the *Journal International de Chirurgie,* 1940. Besides the obvious asepsis, the following seems to me to be of importance in this routine operation: a sparing incision which should not damage the ligaments or muscles and naturally not damage the bone (patella). The incision of choice is the *short longitudinal incision* made medially, namely, laterally, to the patella (parapatellar) which should be located *exactly* over the articular space. The arguments as to other incisions seems to me of purely historical interest. The suspension of the leg on the operating table is superfluous because it might endanger the asepsis, when, during operation, the knee-joint should be moved. Special instruments (strong traction forceps, meniscotom, special retractors) are, in my opinion, essential if the operation is to be performed rapidly and with a small incision. I always operate under local anesthesia with procain. The technic of operation has already been described in detail elsewhere. I *never use a tourniquet.* The local anesthesia is the best means of obtaining ischemia. The more one operates the sooner does he recognize the changes in the semilunar cartilage. Prolonged inspection of the joint during operation becomes thus unnecessary, especially after previous repeated and exact examinations. The technic by which the capsule as well as the fascia are reunited by a continuous suture, the ends of which are led outwardly so that later the suture can be removed *in toto,* is, in my opinion, very important, considering the irritation of the joint and the frequent formation of cysts around the sutures. Since ligatures are seldom necessary, no foreign body is left behind in the articulation, which fact is of great importance.

In 1933, I demonstrated that the frequent occurrence of a post-operative effusion into the articular cavity can be avoided when, before closing the knee-joint, the synovialis in the upper recessus above the patella is *picked up by a traction forceps,* a hole cut out with scissors, and this hole bluntly widened upward into the muscular space: *"Kapselfenster."* This takes only few seconds to perform. By means of this procedure, post-operative effusion, which previously occurred in 35 per cent of all cases, has been reduced to 7 per cent. I have the impression that in the last few years I have succeeded in reducing this figure even more (under 4 per cent). Thus, the mobility of the joint returns to the normal much sooner, and the muscles likewise regain their normal function. This subject has been lately discussed by my pupil Schajowicz (at present with Prof. Vals in the Argentine).

After the operation, the knee is immobilized on a wooden splint at an angle of approximately 170°. Two days after operation, the patient has already learned to innervate his quadriceps muscles. On the third or fourth day, he is made to elevate the extended limb. On the eighth day, the continuous sutures are removed by strong pull, whereupon the patient is instructed to exercise active flexion of the knee. This should never be done forcibly. He will be out of bed on the ninth or tenth day. Massage only the hip, never the joint itself. After 15 to 20 days, most of the patients have completely recovered.

I am aware that I have touched on only some of the questions which concern the semilunar cartilage problem. At any rate, this is a question worth further investigation. The matter should not be treated mechanically, as is so often the case. Various aspects of this problem require further study. However, the operation for rupture of the semilunar cartilage, with its 95 per cent of lasting good results, belongs nowadays among the most successful interventions in general surgery.

SUMMARY

The author presents a study of the pathogenesity of the lesions of the semilunar cartilages, the differences between medial and lateral lesions and the diagnosis and indications for treatment. He points out that the only rational treatment after the diagnosis has been made is surgical. He also gives a detailed account of the surgical technic, the postoperative care and discusses the various points germane to the subject.

RESUMEN

Se hace el estudio de la patogenia de las lesiones del cartílago semilunar, de las diferencias entre las lesiones mediales y laterales, del diagnóstico y de las indicaciones del tratamiento.

El único tratamiento racional después de que se confirma el diagnóstico, es el quirúrgico. Los puntos principales de la técnica de la operación, son los siguientes: incisión que no cause daño a los ligamentos, a los músculos ni al hueso (rótula); la mejor incisión es la longitudinal corta en la línea media; el empleo de intrumentos especiales, entre otros, pinzas fuertes de tracción, meniscótomo y separadores especiales; anestesia local con novocaína. El autor nunca emplea el torniquete. El cirujano experimentado reconoce fácilmente las lesiones del cartílago semilunar. Es innecesaria la inspección prolongada de la articulación, sobre todo después de haber hecho exploraciones minuciosas. Cree el autor que es muy importante la irritación de la articulación y la formación frecuente de quistes alrededor de las puntadas, pero dado que rara vez se necesitan ligaduras, no se deja ningún cuerpo extraño. Para evitar el derrame en la cavidad articular, se levanta con las pinzas de tracción una parte de la membrana sinovial y con las tijeras se abre en ella un agujero. Después de la operación se inmoviliza la rodilla con tablillas de madera, poco más o menos en ángulo de 170°, y después del tercero o cuarto día que empiezan poco a poco los movimientos activos o pasivos. El paciente se levanta en el noveno o décimo día, y queda curado las más de las veces en quince o veinte días. El amasamiento sólo se ha de hacer en el muslo y nunca en la rodilla propiamente dicha.

Pentothal Sodium Intravenous Anesthesia*

SAFETY, RELAXATION AND REACTION OF THE PATIENT, WITH REPORT OF 4400 CASES

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IN EVERY surgical operation the surgeon's concern with the anesthetic is a very definite factor. First, he wants an anesthetic that is devoid of the usual hazards. He wants an anesthetic that has been tried and tested and in which there is the lowest possible mortality rate.

Secondly, he wants an anesthetic that will allow him to do his work with the least amount of trauma to the tissues; that is, he wants relaxation.

Thirdly, he wants an anesthetic that will be acceptable to the patient, an anesthetic that they would have no fear or dread of taking the second or third time.

The anesthetic agent I wish to report to you on was first introduced in the United States in 1934. Pentothal sodium is a thio-barbiturate. Its toxicity is about the same as evipal but it is from 30-50% more potent. The most outstanding features of this compound are that it is an ultra short acting barbiturate, with an excessive fast destructive rate. These two properties make it especially adaptable for anesthetic purposes, because when given intermittently and only in doses needed, definite anesthetic levels may be maintained. It is rapidly broken down by the liver and no trace remains in the body within a few hours. There is little or no effect on the blood chemistry, hepatic, or renal functions. There is no sweating, no loss of fluids. Electrocardiograms taken on normal individuals and patients suffering with cardiac damage during operation showed no change. Like all barbiturates it is a marked respiratory depressant. The rate is not appreciably influenced, but the amplitude is decreased as the depth of anesthesia is increased.

Pentothal sodium has been used most extensively in surgical procedures in which a relatively short operating time interval is required, and in which muscular relaxation is not essential. However, Carraway of Birmingham, Alabama, U. S. A., showed that if oxygen was administered throughout the operation in sufficient amounts to combat anoxemia, major surgical procedures could be done with safety using pentothal sodium as a total anesthetic agent. In this report, more than 80% of the cases were of a major surgical nature, and pentothal was used as a total anesthetic agent.

My comments are made from the standpoint of a general surgeon. All the anesthetics were given by expert anesthetists who were trained in its use. The comments on the action of the drug and its administration are from anesthetists who have had the widest experience in its use in our section of the country.

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*Presented at the International Assembly of the International College of Surgeons, Mexico, D. F., August, 1941

Pentothal sodium was first used in Atlanta 2½ years ago. Within the past year there has been a 400% increase in the use of this anesthetic agent. This rapid increase is due to two factors:

(1) The delightfulness of this anesthetic from the patient's standpoint.
(2) The safety of the anesthetic agent as based on the first one and one-half years experience with it.

The different types of operations in the 4400 cases have been tabulated:

TYPES OF OPERATIONS

General Surgery	2437
Gynecology	684
G. U. Surgery	501
E. E. N. T.	305
Orthopedic Surgery	154
Neuro-Surgery	141
Plastic Surgery	87
Oral Surgery	73
Thoracic Surgery	18
Total	4400

It is seen that General Surgery and Gynecology comprise almost three-fourths of the total. Over 80% of these operations have been major surgical procedures. The ages of the patients are from 3 years to 91 years. The majority of the cases were in the second, third and fourth decades. 12% were beyond the fifth decade. Over 15% of the cases were considered fair or poor risks. This anesthetic is being given more and more frequently to the aged, to the fair and poor risks because it is definitely felt their metabolic functions are upset the least, and their chances of recovery are better. It is a God-Send to the aged patient. The duration of the anesthesia: shortest time, 10 minutes for incision and drainage of abscess, longest time, 11 hours for a brain tumor.

Pentothal sodium is being used with increasing frequency in the Surgical Specialties. The Neuro-Surgeons praise it most highly, and find that it gives complete satisfaction in laminectomies of four hours duration and brain tumor operations of even longer duration.

Fig. 1. [illegible]e anesthetist without assistance [illegible] and holding the patient's chin [illegible] given, drop by drop, intermittently, only as needed by simply turning the gear wheel.

The safety of Pentothal sodium is due to the two factors mentioned above: it is an ultra short acting barbiturate, and it is rapidly destroyed in the body. Thus when given intermittently in drop by drop doses it approaches the minute to minute controlability of the inhalation anesthetics. In major surgical procedures when surgical anesthesia has been reached there is a suppression of respiration, and to combat the resulting anoxemia, oxygen is used constantly throughout the operation. Usually 3-4 liters per minute will suffice. A B.L.B. face mask is adjusted as soon as the patient is asleep. It is felt that the continuous administration of oxygen throughout the operation is one of the "musts" of pentothal anesthesia, both in minor and major surgical procedures.

The problem of administering this drug resolved itself into three factors:

(1) The absolute control of a drug so powerful that surgical anesthesia can be produced in less than one

minute, and where the margin of safety may be exceeded by a few cc's or even drops.

(2) Anoxemia must be combated by the continuous use of oxygen throughout the operation.

(3) One anesthetist alone must be responsible for the safety of the patient.

A movie will show a syringe holder that I devised a little over two years ago that has solved this problem to our satisfaction.

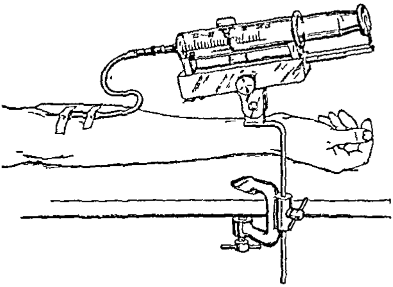

Fig. 2. Drawing showing 50cc capacity syringe holder set up for use. Tension on the movable arm of the rack and pinion gear prevents back flow of blood into the needle, thus no occlusion of the needle by clotting can occur. Saline, glucose, plasma and citrated blood may be easily given along with the anesthetic by the addition of an ordinary 3 way stop cock either at the needle or at the syringe.

PREOPERATIVE MEDICATION

A patient properly prepared takes a much smoother anesthetic and the amount of the drug necessary to use is greatly diminished. A shorter acting barbiturate, as nembutal gr. 1½ is given at 9 p.m. on the night before operation and repeated two hours before operation. One hour before operation pantopon gr. 1/3 and atropine gr. 1/150 is given. Pantopon causes much less postoperative nausea and vomiting. Atropine prevents laryngeal spasm, hiccoughs and coughing.

TECHNIQUE OF ADMINISTRATION

A 2½% solution is routinely used, because the margin of safety is much greater, and in the last 3000 cases there has been no phlebitis, whereas in the first thousand, two cases occurred. A 20 gauge, short bevelled needle, one inch long is used. Saline and plasma, if needed, will not obstruct this needle but if a transfusion of citrated blood is anticipated during the operation a larger needle is used.

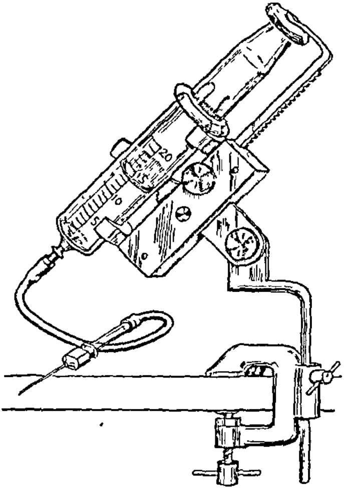

Fig 3 Drawing showing detailed construction of 20 cc capacity syringe holder. The syringe snaps readily into holder. Note the adjustability in any position.

Our anesthestists no longer ask the patient to count while giving the first few cc's of the drug. The patients are less apprehensive and they drop off into a natural sleep after 5-6 c.c. of the drug is given. There is no excitement, no struggling. They do not know when they go to sleep. The B.L.B. face mask is immediately adjusted, and oxygen is given continuously throughout the operation, 3-4 liters per minute will usually suffice. The rate and excursion of the respirations are noted and while the patient is being prepared and draped 3-4 more c.c's are given slowly. The skin is then pinched and if there is no movement the incision may be made. The patient is the sole guide to the amount of the anesthetic given. At times it is necessary to give ¾ to 1 grain before sufficient relaxation is obtained. This amount can be given in as short a time as 15 minutes, but once the patient is relaxed, very little anesthetic is needed to keep perfect relaxation. The first indication of more anesthetic agent needed is an increase in the rate and depth of the respiration, movement and phonation come next.

Hiccoughs can readily be stopped by rebreathing of CO_2 and oxygen and deeper anesthesia. The eye signs are insignificant. However, when the eye is not focused in the center it is indicative of light anesthesia. The pulse is slow and of good volume. The blood pressure usually drops 8-10 points the first few minutes and then regains its normal course. There is very little or no variation before and at the end of the operation. A clear airway must be maintained at all times. An airway must be used if necessary. The throat reflexes are not abolished immediately and the airway can not be inserted until deeper anesthesia is established. To insert an airway too soon may cause coughing and laryngeal spasm. The anesthetic agent is given slowly, drop by drop, intermittently, only when it is needed for relaxation. As in any other anesthetic agent enough of the drug is given to produce relaxation. The average dose has been 1.5 grams although in several cases as much as 4.0 grams have been used with no ill effect. When more than 1.5 grams have been given, and the patient appears to be deeply anesthetized 2 c.c's of a .3% picrotoxin solution is given intravenously when the peritoneum is being closed. This dose may be repeated if necessary before the patient leaves the table. Picrotoxin is a specific analeptic for the barbiturates. Its administration causes a much quicker reaction

DOSAGE

Like ether, or any other anesthetic agent, this drug must be given in sufficient amounts to produce proper relaxation. Each patient is a problem unto himself. I have tabulated the smallest, the largest, and average dose in the operations most usually done.

DOSAGE IN GRAINS

	Cases	Smallest	Largest	Average
Appendectomy	400	0.45	3.3	1.1
Herniorrhaphy	60	0.8	3.0	1.5
Gastroenterostomy	20	1.0	4.0	2.4
Colon Resection	11	1.0	3.5	1.8
Perforated Peptic Ulcer	7	1.1	2.5	2.2
Gastric Resection	4	1.4	3.25	2.4
Thyroidectomy	56	0.4	2.0	1.2
Choecystectomy	35	1.0	3.8	2.2
Hysterectomy	84	1.1	3.4	1.8
Pelvic and GYN Plastics	56	0.5	3.0	1.0

POSTOPERATIVE CARE

A nurse should be in constant attendance to hold the chin up until the patient reacts. Hypodermics of morphine and pantopon postoperatively should be withheld until the patient is moving around freely and complaining severely of pain. A hypodermic given too early causes depression of respiration. 1/6 grain doses is usually enough. Blood pressure is recorded every hour for 3-4 hrs. and if there is evidence of shock, appropriate measures are instituted.

Prolonged sleep at times will cause concern among the patient's family. Picrotoxin 2 c.c., of a .3% of a solution given IV every 35-40 minutes will cause a response. Metrazol 1-2 c.c. IV will also hasten recovery.

CONTRAINDICATIONS

The contraindications are becoming less and less as we learn more about the drug. The patient with marked diminished cardiac and pulmonary reserve are naturally bad risks. Patients are recovering from emergency operations that two years ago would have had no chance. Small children from 6-9 years of age will sometimes take as large a dose as a 150 lb. adult. They sleep from 18-20 hours, temperature will go to 102 to 103 degrees. Although no bad results have occurred in the few cases observed, I feel that some other agent should be used. Jaundiced patients tolerate the drug well. We have seen no bad results when used along with sufanilimide. No patient with a full stomach should be given this drug, eg. accident cases, emerging appendectomies, and intestinal obstruction, until the stomach contents have been emptied.

COMPLICATIONS

Atelectasis., Two cases, both recovered.

Drug ideosyncrasies. Four cases manifested by generalized rash and elevated temperature. Recovery with no ill effects.

Phlebitis. Two cases. Recovery with no ill effects.

MORTALITY

No deaths have occurred that could be attributed to the anesthetic.

RESULTS OF ANESTHESIA

This anesthetic agent is ideal from the patient's standpoint. It is 100% satisfactory. They drop off into a natural sleep they do not remember when they go to sleep, they awaken back in their rooms as if from a refreshing sleep. They will take the anesthetic again and again, and will tell their friends about it. It is removing the dread and fear of the operating room. Postoperative nausea and vomiting occur in less than 5% of the cases. From the surgeon's standpoint all who have used it to any extent are very enthusiastic over it. Relaxation depends upon the degree of anesthesia. The same relaxation as with spinal may be obtained in the upper abdomen as well as in the pelvis. The skin remains dry and warm. Not one drop of fluids is lost by visible sweating.

The safety of this anesthetic is in direct proportion to the experience of the anesthetist giving it. It is a powerful drug, the margin of safety is small, but adequate, if understood.

SUMMARY

Pentothal sodium intravenous anesthesia has been used in 4400 cases as a total anesthetic agent.

This anesthetic agent is ideal from the patient's standpoint. The rapid increase in the number of cases given in the past year in the Atlanta hospitals indicate that the surgeons are satisfied with the relaxation obtained and the safety accorded their patients.

Penthothal sodium should never be given except by an anesthetist trained in its use, and who has all the methods of combating anoxemia at hand.

A simple rack and pinion syringe holder that simplifies its administration is described.

RESUMEN

En 4400 pacientes se empleó como único anestésico general el pentotal sódico por vía endovenosa.

Este anestésico es ideal en lo que respecta al paciente. El aumento creciente del número de casos en que se administró esta anestesia el año pasado, en los hospitales de Atlanta, Ga., E. U. A., indica que los cirujanos están satisfechos con la relajación obtenida y con la seguridad de la anestesia.

El pentotal sódico ha de ser aplicado siempre por algún anestesista competente, que disponga de todos los medios para contrarrestar la anoxemia.

Se describe una jeringa sencilla, con su portajeringas.

INTERNATIONAL CREDENTIAL BOOKLETS

All Affiliates are requested by the officials of the College to carry their International Credential Booklets to all Assemblies, State Guild meetings and clinics. This will facilitate the proper certification of their attendance.

New Prothesis And Surgery Towards Prothesis Motion*

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IF THE plastic eye is "un fait accompli", it will naturally have an ill effect upon the glass eye industry; for out of plastics, imitation crystals, the rarest of colorings have been produced. The Snellen reform eye, blown from the cryolith or opalescent glass, was much delayed in execution, because the artisan experienced great difficulty at first, in blowing the glass into a double shell eye and only succeeded after many trials. The plastics have been used for some years for fabricating protheses. However, none of these substances have proved satisfactory; although attempts have failed, it does not mean that these materials cannot be developed advantageously.

The plastics have been known for some years and a number of plastic eyes have been fabricated. At one time the intention was to turn out such eyes enmasse. They did not prove satisfactory. Fully 15 patents have been taken out in the U.S.A. for plastic artificial eyes.

In March, 1935, James L. Travers of Cleveland, Ohio, developed out of vinyl resin plastics, an artificial eye of great merit.

Even if the world was informed of the composition of the cryolith glass, a demand would still exist for the plastics, for such materials can be shaped in conformity with the socket and handled without fear of breaking, whereas, glass is fragile, demanding the maximum of gentleness. The future of the plastic prothesis is promising, for many surgeons have sufficient ingenuity to cut them out in conformity to the requirements of the socket, whereas, glass once blown cannot be altered.

The surgeon has already provided the moving stump for the prothesis to saddle, but the glass artisan frequently limited in anatomical knowledge and not familiar with the plastics has been unable to make full use of the surgeon's skill.

The early plastic eyes were made of cellulose, either the nitrate or acetate. In the former, camphor was employed as a plasticizer, and in the latter, vegetable oils. I have not had any personal experience with the cellulose but when studying its properties, I have seen very little objection to this material. It is sufficiently light, its compressive strength all that would be desired but its water absorption power probably greater than wanted in an artificial eye. The Urea Base Compounds offer many outstanding advantages. They give a considerable degree of translucency with a brightness and depth of color superior to opalescent glass which is the attractive feature of the German glass. These plastic substances will withstand 15 to 30 minutes in boiling water without deleterious effect and show no deterioration after three years.

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*Presented at the International Assembly of the International College of Surgeons, Mexico City, August, 1941.

The production of acrylic resins such as lucite are the climax of a long history of chemical research. These resins are beautifully transparent, and optically perfect. The colors rival cast phenolic resins. The material is light, the strength all one would want, and its water absorption practically nil. To be exact, .5% in 168 hours.

The Poulard and Real protheses were of celluloid. As also those of Dessell and Lafittee, Steiner, Valois and Bonnelon.

None of these eyes, as also the glass prothesis, was designed for any other purpose than to act as a shield. However, in 1892, John L. Borach, Philadelphia, Pa., May 17, took out a patent No. 474,808 which provided an artificial eye that is susceptible of receiving all the movements that are imparted to the natural eye. This was accomplished by a flexible spring. And that of Theodore Dimitry of New Orleans, Annals of Opthalmology April 1917, utilized the different shapes and contours given the Snellen eye but on the posterior surface there is an opening into the hollow to procure a moderate suction by the vacuum that can be produced by having repeatedly pressed upon the prothesis. He also used a rubber diaphragm stretched across the eye, for the same purpose, namely, to obtain motion for the prothesis.

The artificial eye reflects the story of Pygmalion and Galatea—man carves in marble a woman of perfect form, falls in love with his handiwork and prays it be given life. As regards the artificial eye, man has blown of glass a shield to fit under the lids, painting to perfection the iris, pupil, and the blood vessels there on, yet has ever since waited for animation. Pygmalion thought his Galatea perfect. The artisan his artificial eye equally so.

For many years I have labored to accomplish motion for the prothesis and to have it move in equal extent with the companion eye. My inordinate desire to this end during my early days in opthalmology when I was green in judgment is accountable for my condemnation of enucleation as unsurgical. The socket this operation left apparently could not provide the motion sought. As a consequence I contributed my share of substitute surgical procedures, but I was dissatisfied even with them for the substitute enucleation surgery also failed to produce orderly motion. However, I did not admit that motion for the prothesis was unobtainable but persisted in my efforts and even hitched the prothesis to a ball that was implanted in the sclera; but to no avail; the motion obtained was at best desultory. *Though the artificial eye and its position in the socket was in range of human observations I was not aware that its shape balked motion. Because of not discerning this fact, I worked ineffectively.*

The glass eye of Snellen is thought of as a masterpiece. However, with all its good qualities, it is but a shield. Then I introduced another surgical procedure, implanting a colored glass ball after evisceration through an opening in the sclera leaving the cornea which in time thinned and finally the implanted ball was extruded, but I continued in my attempts to obtain motion for the prothesis.

The plastics now commonly used in all types of endeavors were responsible for bringing about newer thoughts. Some of these materials possessed the appearance of glass and in particular, cryolith glass from which the artificial eye is blown. I became interested in them, my motive being to use them to replace the secret glass our enemy used in blowing the artificial eyes. War was on, and I knew that the different shapes given the glass eye could be duplicated in this material. As regards obtaining color of iris and the depth of the pupil, there was no difficulty encountered. The climax came when I realized *that plastic artificial* eyes could be altered in shape, by the surgeon familiar with the muscles and the tissue of the socket, to achieve the object sought. Such qualities in a material opened a long vista of possibilities.

With these findings before me, I naturally retracted my earliest comments regarding the enucleation surgery, a turn about as it were, for after all is said and done, fully 90% of condemned eyes are enucleated, therefore, it is the enucleated socket that is in need of the moving prothesis and if motion for the prothesis in the enucleated socket could be accomplished motion for the substitute procedures could be easily accomplished. After enucleating the eye, my first step is to adopt to the socket an interim prothesis made of a transparent plastic and shaped like a soup plate with the bottom *knocked out. The large hole in the center* permits arranging the muscles and the tissues of the socket and the transparency of the interim prothesis permits them to be arranged advantageously. I was cognizant that the old prothesis could not be made to move, therefore, I must find out if a new design would move. The interim prothesis prepared the socket to this end. The new designed prothesis decided upon was a section from a 22 mm sphere, for what was wanted was harmonious action with the companion eye and if this was to be obtained, it must of necessity be of its spherical measurements. *But it was not* simply a prothesis that was required but of equal importance was the need to decide upon the *arrangement to* be given the muscles in the enucleated socket. After some experiment, arrangement for the muscles and tissues of the socket was determined, however, not unalterably so.

The interim prothesis is not adapted simply to prevent a symphlesphron and for stretching tissue but is to further the arrangement of the muscles and tissues for the permanent prothesis' motion. It is contended that if desired motion is accomplished for the interim plate, it can be built upon for the other requirements of the fully developed prothesis.

My preferred procedure at this time for enucleating the eye begins by making a vertical cut in the conjunctiva starting at the limbus line and extending along the superior rectus into the culdesac. The conjunctiva is now cut in a line circumscribing the limbus. The superior rectus is the first severed, yet cut to leave a stump remaining on the sclera. The globe is turned down and the superior oblique muscle is next severed. After the other muscles and the optic nerve are cut from the globe, hemorrhage is then controlled. The interim prothesis is now introduced, and through *the hole in it, the internal and external* recti muscles are approximated to the best advantage. However, they are not as yet sewn together. The superior and inferior recti are left distal from one another for they are to serve as extremes of a vertical scar. The superior rectus muscle is well isolated for the main body of it is to be sewed to the main body of the levator palpebrae muscle. There are two reasons for sewing together these two muscles. The first is to provide a unit action for the two muscles. The second reason is to increase the depth of the culdesac.

Before sewing the two recti together, namely, external and internal recti the conjunctiva is freed on the temporal side from the external rectus so as to regulate muscle and tissue to an advantage. The time has not [illegible] I am able to utilize the oblique muscles advantageously. The interim prothesis is now re-inserted, motion tested. If satisfactory, the eye is then bandaged. The interim prothesis remains until the first dressing.

The permanent prothesis comes in two sections, the scleral part and the corneal-iris part. The scleral part is similar in measurement to the curve of the normal eye. These parts are made in various shades with or without the tracings of the blood vessels. The posterior surface may be compared to a football stadium—a series of tiers leading to a pit. In the plane of the diameter corresponding to the upper and lower margins of the eye a furrow is cut that tapers to the pit and traverses each of the steps. The pit, more accurately described, is a circular hole extending through the sclerae part. The outer portion of the hole will be filled by the corneal-iris part.

The aforementioned furrow is cut deeply at the periphery and appears as a rounded V cut into the scleral part; the cut plays an important role in fitting the prothesis. This furrow straddles the suturing of the internal and external recti muscles and the notch which marks the upper extreme of the prothesis fits into the angle formed by the now sutured superior rectus and levator palpebrae muscles and the prongs of the V shaped cut project backward over the tongue of the superior rectus.

The prothesis differs from the reform eye in that like a cup it fits over the muscles of the socket in a definitely orderly manner and is anchored at the angle of the superior rectus and the levator palpebrae muscles. Remember during the suturing of the conjunctiva, the external culdesac is made shallower whereas the superior culdesac is made deeper, therefore, the tendency of the artificial eye to twist is reduced.

It has been pointed out that the fixation of the prothesis is in the vertical meridian and has no fixation point in the horizontal meridian; moreover, it is anchored at the junction of the superior rectus and levator palpebrae muscles; also, the furrow cut into the posterior of the prothesis rests over the point of suture of the internal and external rectus muscles. The fact that the posterior surface of the prothesis has been made in step formation will prevent the muscles from sliding under the prothesis.

The prothesis will not be inhibited in movement in this horizontal meridian since it is free in this meridian but will be turned on its vertical axis by the action of the internal and external muscles since the suturing of these muscles rests in the furrow of the prothesis and other portions rest against the steps of the prothesis.

Motion in the vertical meridian is relatively unimportant nevertheless some motion may be obtained by the action of the lids.

The above contribution has to say that the plastic artificial eye is an accomplishment and may even be superior to the glass eye. Throughout the years motion for the glass eye has been sought, but not obtained; the plastics, however, are readily moulded and designed even in the hands of the surgeon, therefore has made possible an ambition of years, motion for the prothesis. A type of surgery to this end is submitted.

SUMMARY

The author evaluates in review the prothesis and surgery towards prothesis motion as practiced today and describes original studies, improvement of material and original technic which he has devised (plastic artificial eye).

DIMITRY, THEODORE, J

Enucleation of the eyeball a faulty technic, cosmetically considered N O. Med & Surg J. 1907

A Suggestion For An Improved Prothesis Am J Ophth 1907.

Simple Enucleation and Evisceration Unsurgical So Med J 1907.

Operation Relegating Enucleation of the Eye to Its Proper Position. Am J. Ophth 1919

Eviscero Neurotomy With An Endothesis As A Substitute For Enucleation Arch of Ophth 1902

Plastic Sphere For Implant After Evisceration Or Enucleation of the Globe E E N & T Monthly October 1940.

The Story Of the Artificial Eye E E N. & T Monthly October, 1941.

SUMARIO

El autor evalua en revista de prótesis y cirugía hacia la prótesis de motion como es pacticada hoy y describe estudios originales, mejoramiento de material y técnica original las cuales nosotros hemos hecho (ojo artificial plastico).

INTER-AMERICAN EXCHANGE TRAINING

Professor Herman de las Casas, Dean of the University of Caracas, Venezuela, has been appointed Chairman of the Inter-American Exchange training activities. Those desiring further information please communicate with Professor Herman de las Casas, Sarria, Caracas, Venezuela

Effect of Sympathectomy on Blood Volume in Thromboangiitis Obliterans

M. RACHMILEWITZ, M.D., AND M. WOLMAN, M.D.*
JERUSALEM, PALESTINE

SILBERT and collaborators[1,2] have found that thromboangiitis obliterans is usually accompanied by reduction in the blood volume. They report an average reduction of 22.3 per cent for untreated patients and somewhat less for treated patients. In 10 per cent of the cases examined, however, reduction in blood volume was not observed. The findings were corroborated by chemical analyses of the blood, which showed that Buerger's disease is usually associated with a tendency to hemoconcentration.

On the other hand, Roth and Maclay[3] concluded that reduction in blood volume is not a common feature in cases of thromboangiitis obliterans, and regarded the reduction occasionally seen in their cases as insignificant. It is interesting to note that the blood and plasma volumes were found by these authors to be lower in Jewish patients than in Gentiles.

EFFECT OF ADRENALIN

Many cases of Buerger's disease have been treated in this hospital (Hadassah University Hospital) by gangliosympathectomy, sometimes associated with adrenalectomy. The procedure seems to have a beneficial effect upon the circulation in the affected extremities and upon the healing of the ulcers. It seemed to us of interest to determine whether this procedure has an effect on blood volume, and whether improvement in the clinical condition is associated with an increase in blood volume.

The effect of an excess of adrenosympathetic stimulation on blood volume has been studied by several investigators. Hitzenberger and Tuchfeld[4] found that subcutaneous injection of adrenalin caused an increase in blood volume in 50 per cent of their clinical cases. These authors suggest that the increase is due to a contraction of the great blood reservoirs, especially of the liver. Their suggestion is corroborated by the observation that adrenalin is without effect in cases of liver cirrhosis.

Brednow[5] arrived at different results. According to his work, subcutaneous or intravenous injections of adrenalin cause an increase in the number of erythrocytes and a decrease in plasma volume.

Freeman[6] has found that "prolonged activity of the sympathetic nervous system . . . injection of adrenalin . . . results in a decrease in the circulating blood volume." He concludes that "prolonged vasoconstriction of itself results in a loss of blood from the circulation."

Moon[7] gives another explanation for this phenomenon; he supposes that adrenalin produces anoxia by arterial vasoconstriction, which in its turn causes atony of the capillaries and transudation of plasma.

Various authors have also studied the effect of adrenalectomy and sympathectomy on the blood volume of laboratory animals. Britton and Silvette[8] found that blood volume in cats is usually reduced after adrenalectomy. Swingle, Vars and Parkins[9] found that adrenalectomized dogs have a decreased blood volume, and mention work by previous authors (Rowntree and Brown,

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*From the medical department, Hadassah University Hospital.

Table 1—Effect of Sympathectomy upon Patients with Buerger's Disease

Case	Operation	VALUES BEFORE OPERATION								VALUES AFTER OPERATION								Change in plasma vol per kg	Change in blood vol per kg	Clinical Improvement
		Weight in kg	Red cells per c mm	Hemoglobin % (Sahli)	Hematocrit %	Plasma vol in cc.	Plasma vol per kg	Blood vol in cc.	Blood vol per kg	Weight in kg	Red cells per cc.	Hemoglobin % (Sahli)	Hematocrit %	Plasma vol in cc.	Plasma vol per kg	Blood vol in cc	Blood vol per kg			
1 (Z. A.)	L high (lumb.) gangliosympathectomy and adrenalectomy	83.5	5 100 000	100	51	2 320	27.9	4 730	56.6	77.0	4 770 000	95	46	3 400	44.2	6 300	81.8	+58.4%	+44.5%	Improved
2 (T. J.)*	R. high (lumb.) gangliosympathectomy and adrenalectomy	76.0	5 150 000	90	50	2 565	33.7	5 130	67.5	74.0	3 930 000	73	47	2 665	36.0	5 130	69.3	+6.8%	+2.7%	Unimproved
3 (Same)	Bilat. (lumb.) high gangliosympathectomy	74.0	3 930 000	73	47	2 665	36.0	5 130	69.3	74.0	3 790 000	70	42	3 250	43.9	5 605	75.7	+21.9%	+9.2%	Improved
4 (W. J.)	R. high (lumb.) gangliosympathectomy and adrenalectomy	56.8	5 130 000	82	51	1 770	31.2	3 610	63.6	54.0	3 870 000	72	49	2 800	51.9	5 490	101.7	+66.3%	+59.9%	Unimproved
5 (M. Z.)	(Same as above)	65.5	4 690 000	95	55	2 175	31.7	4 830	73.7	62.0	4,160 000	80	49	3 195	51.5	6 260	100.9	+62.5%	+36.8%	Unimproved
6 (Same)	L high (lumb.) gangliosympathectomy	67.5	5 070 000	97	54	2 640	39.1	5 710	84.6	66.0	4 390 000	90	52	2 800	42.4	5 840	88.5	+8.4%	+4.6%	Improved
7 (G. I.)	(Same as above)	79.0	4 610 000	80	48	3 420	43.3	6 575	83.2	74.4	4 820 000	70	48	3 100	41.7	5 960	80.1	−2.6%	−3.8%	Improved
8 (Same)	R high (lumb.) gangliosympathectomy	(not determined)								(not determined)										
9 (B. L.)	R high (lumb.) gangliosympathectomy and adrenalectomy	52.9	4 740 000	75	48	2 035	38.5	3 910	73.9	51.0	4 370 000	71	43	2 380	46.6	4 175	81.8	+21.0%	+10.7%	Unknown
10 (C. D.)	Bilat. high (lumb.) gangliosympathectomy	49.4	4 290 000	82	51	1 900	38.4	3 880	78.5	50.5	3 800 000	80	55	2 350	46.5	5 220	103.3	+21.0%	+31.6%	Improved
11 (W. L.)	Bilat. low (lumb.) gangliosympathectomy	56.0	4 460 000	100	57	1 740	31.0	4 050	72.3	52.0	4 230 000	85	49	2 650	51.1	5 200	100.0	+64.8%	+38.3%	Unknown
2 (S. P.)	R high (lumb.) gangliosympathectomy	70.2	4 920 000	80	45	2 680	38.5	4 870	69.6	68.0	4 040 000	70	38	2 550	37.5	4 110	60.4	−2.6%	−13.2%	Unimproved
3 (K.)	L high (lumb.) gangliosympathectomy	56.2	5 170 000	95	57	1 870	33.3	4 345	77.6	57.0	4 400 000	90	54	3 140	55.0	6 840	120.0	+65.1%	+54.6%	Unknown
	w (lumb.) gliosympathectomy	68.0	5 860 000	85	58	2 200	32.6	5 240	77.0	66.0	4 750 000	72	44	3 100	46.9	5 535	83.9	+43.8%	+9.0%	Unknown

*In this patient the first operation must be considered as a control since the part removed by the surgeon was found to be non nervous tissue on subsequent histological examination. In the second operation sympathetic ganglia on both sides were successfully removed.

Wyman, etc.) whose results support a similar conclusion.

The experimental evidence cited above does not necessarily bear directly on the problem we investigated, since in complete adrenalectomy the symptoms resulting from removal of the medulla and from removal of the cortex have not yet been fully differentiated. It seems probable, however, that the diminishing effect of the adrenals on blood volume is due to the cortex.[8]

Complete sympathectomy has been performed on dogs by Wilson, Roome and Grimson,[10] who sought to estimate the blood volume of dogs by bleeding them to death. They did not find any striking difference in the blood volume of normal and of sympathectomized dogs. More recently Hamlin and Gregersen,[11] found that in cats sympathectomy causes an increase in blood volume amounting on the average to 26.2 per cent of the original values.

MATERIAL AND METHODS

Our clinical material was not selected, and consisted of Jewish patients who entered Surgical Departments A and B of the Rothschild Hadassah University Hospital for treatment.* In several instances blood volume determinations were also made upon sympathectomized patients who suffered from diseases other than Buerger's.

Blood volume determinations were made by the plasma dye method of Keith, Rowntree and Geraghty,[12] using a 1 per cent congo red solution.† Determinations were first made, as a rule, within the three days before operation, and again between the tenth and fourteenth days after operation, when the effect of operative trauma is presumably over.

It has been our experience, in which we are in agreement with previous workers, that the congo red method of estimating the blood volume has a range of error of ±5 per cent. Owing to the fact that the patients underwent an abdominal operation during the interval between blood volume estimations, changes in blood volume of less than 10 per cent cannot be considered as significant.

Simultaneously with blood volume determinations, data as to body weight, red cell counts, hemoglobin values (Sahli), and hematocrit values (Haden's method[13]) were obtained.

The operations performed were lumbar gangliosympathectomy at different levels, unilaterally or bilaterally, with or without adrenalectomy.

RESULTS

The results of the determinations are set forth in Tables 1 and 2. In all, the investigation covered 16 patients, 11 of whom suffered from thromboangiitis obliterans, and 5 from other diseases. The effect of twenty operations of the sympathetic chain of these patients was observed. On comparing the results in patients with thromboangiitis obliterans (Table 1) with results in patients suffering from diseases other than thromboangiitis obliterans (Table 2), it is seen that in the former sympathectomy generally led to an increase in blood volume, whereas in the latter group the effect was slight or absent.

Returning to the Buerger group, it is seen that in most cases blood volume was reduced preoperatively. The average of plasma volume and blood volume per kg. in these patients before operation was 34.7 cc. and 71.6 cc., respectively, while the corresponding values in the control group were 45.8 cc. and 91.3 cc. In the thromboangiitis obliterans group plasma volume per kg. was reduced, on the average, by 24.3 per cent, and total blood volume by 21.6 per cent.

In some of our cases of Buerger's disease the values of plasma and blood volume per kg. were found to be normal (Case G. E.,

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*We are indebted to the directors of the Surgical Departments, Dr. Joseph and Professor Mandl, for permission to make these determinations upon patients of their wards.

†Congadom was kindly supplied by "Hillel" (Haifa, Palestine).

Table 2—Effect of Sympathectomy upon Patients with Diseases other than Buerger's Disease

Case	Diagnosis	Operation	Values before Operation								Values after Operation								Change in plasma vol per kg	Change in blood vol per kg
			Weight in kg	Red cells per c mm	Hemoglobin % (Sahli)	Hematocrit %	Plasma vol in cc	Plasma vol per kg	Blood vol in cc	Blood vol per kg	Weight in kg	Red cells per c mm	Hemoglobin % (Sahli)	Hematocrit %	Plasma vol in cc	Plasma vol per kg	Blood vol in cc	Blood vol per kg		
1 (R G)	M Hirschprung	Bilat ganglio sympathectomy (L 2 3 4 5 S 1)	38 2	3 920 000	75	49	1 850	48 4	3 630	95 0	34 5	3 260 000	70	46	1 750	50 8	3 240	93 9	+4 9%	—1 2%
2 ([illegible] M)	Phantom limb pain	Bilat high (lumb) ganglio sympathectomy	43 0	4 700 000	82	41	1 660	38 6	2 830	65 8	45 0	4 270 000	68	38	1 950	43 3	3 145	69 9	+12 2%	+6 2%
	Arthrosis	(Same as above)	53 9	4 780 000	85	54	2 670	49 5	5 800	107 6	53 8	4 730 000	83	53	2 660	49 4	5 660	105 2	—0 2%	—2 2%
	Ulcus cruris	R high (lumb) gangliosympathectomy	47 3	4 070 000	70	45	2 375	50 2	4 320	91 3	46 2	4 030 000	70	43	2 150	46 5	3 770	81 6	—7 5%	—10 6%
)	10	R high (lumb) gangliosympathectomy & splanchnicectomy	55 5	5 010 000	85	56	2 350	42 3	5 340	96 2	52 7	5 080 000	80	51	2 450	46 5	5 000	94 9	+9 9%	—1 4%
		(Same left)	52 7	5 080 000	80	51	2 450	46 5	5 000	94 9	51 0	4 760 000	78	50	2 200	43 1	4 400	86 2	—10.2%	—9 2%

the time of the operation when the condition of the gall bladder and the adjacent organs are before the surgeon. If the diseased gall bladder can be removed without hazard to the patient, it should be done. However, there are many times that a quick operation, with drainage of the gall bladder under local or intravenous anesthesia, is a life saving procedure.

CLARK D. BROOKS, M.D.

1942 ANNUAL ASSEMBLY
UNITED STATES CHAPTER

The Medical Profession
is invited to attend the next Annual
Assembly of the United States Chapter
of the
International College of Surgeons
to be held in Denver, Colorado,
July 15 through July 18, 1942

The President's Page—United States Chapter

THE United States Chapter and the International College of Surgeons carry on unceasingly in pursuit of their respective constitutional assignments, that the interest and enthusiasm of the work to be done be maintained, and in earnest consciousness of our high aims and serious mission we may, from day to day, take account of stock with gratifying success.

As in every worth while undertaking one can expect resistance, opposition and set back, these reactionary forces, at times more dilatory, may be virtually destructive. It is for us to clearly visualize our course with firm conviction that we are in possession of opportunities to be found in the unfolding of our view of the gifts of science and to the duty *we have accepted to pass on to younger* generations of surgeons, the experience of bygone days and the stimulus of internationalization of knowledge and research.

We are dedicated as never before in our national history to the defense of our liberty and the implication of this unprecedented task calls for abnegation and force, in sympathy, loyalty and coordination with all the agencies in existence and with those to be created, to the ultimate reality of peace, liberty, spiritual freedom, manhood and culture. To secure these attributes we must appreciate the vitality of the basic principles and objectives upon which the International College of Surgeons is founded. Our Fellowship can and will play its role in providing for the Army and Navy's personnel of the nation such instruction in emergency and war surgery as will fit them for maximum efficiency in the service. Moreover, civilian medical protection in morale and prophylaxis will be hugely dependent upon medical coordination and equipment and here, as well, our organization can plan and direct helpful assistance.

Obstacles may appear in the way, reduplication of activity in the various branches of the service may have to be adjusted for practical simplification, but the fact remains incontrovertible that our Fellowship can be of definite service in this great national emergency.

Our International College is singularly called upon to bring into function the educational activities of its membership by the plan of the Board of Governors and out of this organized teamwork, timely assistance can be provided wherever the demand may be made. It is our duty, our opportunity and privilege to place the personnel and facilities of our organization, as such, at the disposal of the government now or at any time if efficient service is in the offer.

A War Council of the Chapter and the College has under study ways and means by which our resources can be placed at the disposal of the government.

Bear in mind that your Chapter, through its Business Office, maintains daily contact with the Fellowship activities, giving all possible information to applicants desiring affiliation with the College. International contacts with foreign Chapters and with National [illegible] gents where Chapters are not yet duly organized, are kept up and enthusiastic cooperation is ever [illegible] evidence.

DESIDERIO [illegible]

GUILD ACTIVITIES

POST GRADUATE STUDY GUILD, UNITED STATES CHAPTER

DIRECTOR
DESIDERIO ROMAN, M D.
250 South Seventeenth Street
PHILADELPHIA

DIRECTOR EASTERN STATES
GEORGE S FOSTER, M D.
925 Chestnut Street
MANCHESTER, N H

DIRECTOR WESTERN STATES
CHAS. H. ARNOLD, M D
Terminal Building
LINCOLN, NEBRASKA

DIRECTOR NORTHWESTERN STATES
JAMES C. MACGREGOR, M.D.
Medical Arts Building
GREAT FALLS, MONTANA

THIRD ANNUAL MEETING OF THE PHILADELPHIA GUILD OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS

This meeting was held December 12, 1941. The program was as follows:

Jefferson Hospital—Dr. Thomas A. Shallow
Operative Clinic

10:00 A.M.—Dr. Kenneth Fry—Peritoneoscopy

11:30 A.M.—Dr. Thomas Shallow—
1. Gall Bladder
2. Carcinoma of the Rectum
3. Carcinoma of the Stomach

Philadelphia General Hospital

2:00 P.M.—Dr. William T. Lemmon—Demonstration—Continuous Spinal Anesthesia.

University Hospital—Dr. Eldridge L. Eliason
Operative Clinic

9:00 to 10:00 A.M.—1. Partial Resection of colon
2. Thyroidectomy
3. Thoracotomy
4. Resection of Sigmoid
5. Appendectomy

10:00 A.M.—1. Dr. William Osler Abbott—Surgical Application of the Miller-Abbott Tube

10:15 A.M.—2. Dr. Jonathan Rhoades—Experimental and Clinical Use of Coumarin

10:30 A.M.—3. Dr. Albert Bothe—Studies on the Pathogenesis of Carcinoma of the Ureters.

10:45 A.M.—4. Dr. Robert Brown — Diagnosis of Lesions in and about the Cecum

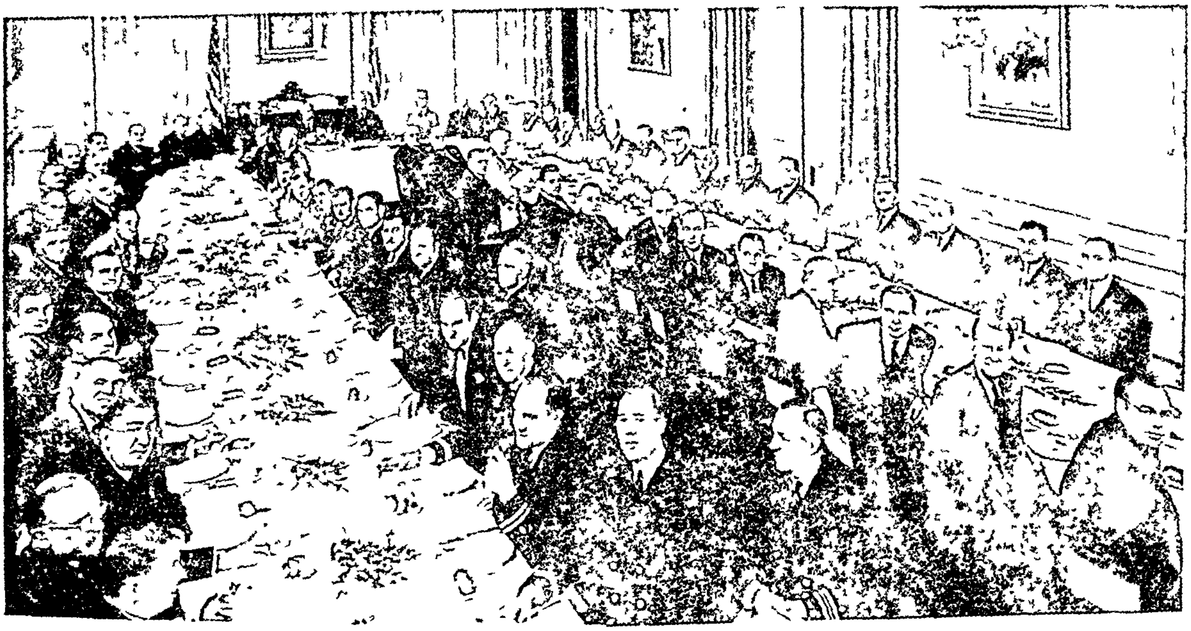
11:00 A.M.—5. Dr. Julian Johnson—Total Pneumonectomy

11:15 A.M.—6. Dr. Harry MacNamee—Abdominal Aneurysm

11:30 A.M.—7. Dr. Eldridge Eliason—Surgical Aspects of Intestinal Obstruction

Naval Hospital—Drs. Shaar, Martin and Kreuz

10:00 A.M.—12:30 P.M.—
1. Gastric Resection—Spinal Block



Guild Fellowship Dinner, Union League Club, Philadelphia

2 Cholecystectomy—Continuous Spinal
3 Excision of Semilunar
4 Open Reduction Fracture of Olecranon
5 Reduction Fracture of Os Calcis
12 30 P M—Ward Rounds—Naval Hospital
Philadelphia General Hospital—2 00 P M to 4 00 P M—Dr Moses Behrend
1 Lobectomy
2 Dry Clinic —
Total Pneumonectomy for Tuberculosis
Cases illustrating Thorocoplasty
4 00 P M
Hahnemann Hospital—Dr Charles P Bailey
Thymectomy
Shriners Hospital—Orthopedic Surgery—Dr John Royal Moore
2 00 P M to 4 00 P M
Temple University Hospital—Dr John Royal Moore
Follow Up Clinic of Delayed Reduction
Method of Treatment of Fractures
St Luke's and Children's Medical Center—10 00 A M to 12 Noon—Dr Leonard Averett
Vaginal Hysterectomies
Picture Demonstration of the technique of Vaginal Hysterectomy
Dr Earl B Craig
9 30 A M to 12 Noon
1 Subtotal Hysterectomy
2 Total Hysterectomy
3 Craig Benson Technique for Carcinoma of the Body of the Uterus
4 Internal Pelvic Relaxation
2 00 P M
Lying In Hospital—Dr Clifford B Lull and Staff
Operative Gynecological and Obstetrical Cases

MEETING OF THE HUDSON VALLEY GUILD OF THE INTERNATIONAL COLLEGE OF SURGEONS

On December 4, 1941 the Hudson Valley Guild of the International College of Surgeons in cooperation with St Francis Hospital, Poughkeepsie, New York and its' committee consisting of Doctors' James E McCambridge, James J Toomey and Richard J Boyce held a Symposium on Cancer Through the bountiful hospitality of Sister Superior Angela and the Sisterhood all the facilities of the hospital were placed at our disposal Over two hundred physicians from the Hudson Valley and the neighboring states of Connecticut, New Jersey and Massachusetts attended The program for the day opened with registration in the Main Building of *St Francis at 9 A M and continued until 6 P M* Luncheon was served with the compliments of the Ladies Auxiliary of St Francis Hospital at which Mrs J Roosevelt, the President and her auxiliary acted as hostesses The scientific program was continued until 6 P M after which the staff of St Francis Hospital provided a cocktail hour following which dinner was served

The first speaker of the morning session was Doctor George S Foster of Manchester, N H His topic was "Present Status of Malignancy" Doctor Charles Muzzicato of New York City, State Senator and chairman of the Public Health committee for the state, spoke on ' Recent Legislation Pertaining to Cancer" "Breast Tumors" were discussed by Doctor I Busch, associate surgeon of the New York Cancer Institute Doctor Anatole Kolodny, author of a text book on Bone Tumors spoke on "Present Status of Bone Tumors" There was an address on "Malignant Renal Tumors" by Doctor John Duff of New York City, director of Urology at Morrisania City Hospital and attending Urologist at Broad Street Hospital Doctor J J Toomey lead a 15 minute discussion Doctor Duncan MacPherson of New York City, Specialty Regent, Otolaryngology of the International College of Surgeons and consulting Otolaryngologist at Mid Town, Bronx and West Side hospitals, discussed "Carcinoma of the Larynx" This was discussed by Doctor J E McCambridge "Gastric Carcinoma" was the opening lecture of the afternoon program and was delivered by Doctor A A Berg of New York City Doctor Berg is senior state regent of the International College of Surgeons Surgeon to Mt Sinai and Montefiore hospitals, and clinical professor of surgery at Columbia University A 15 minute discussion of Doctor Berg's paper was conducted by Doctor I W Held of New York City, clinical professor of medicine at New York University and Bellevue hospital Medical College and attending physician at Beth Israel hospital Doctor Milton Bodenheimer of New York City, censor of the International College of Surgeons and attending surgeon at the Hospital for Joint Diseases and Sydenham hospital also discussed Doctor Berg's paper Doctor William Watson, associate attending surgeon at Memorial Hospital for the Treatment of Cancer, discussed "Carcinoma of the Thyroid" "Tumors of the Cerebello Pontine Angle" was the topic of a talk by Doctor Byron Stookey, specialty regent of

MRS J ROOSEVELT ROOSEVELT
President of the Ladies Auxiliary of the St Francis Hospital Poughkeepsie, N Y

the International College of Surgeons, professor of Neurological Surgery at Columbia University, and director of Neurological Surgery at the New York Neurological Institute. The discussion of Doctor Stookey's paper was opened by Doctor James P. Kelleher. A paper on "Cancer of the Rectum" was read by Doctor Frank C. Yeomans of New York City, Professor of Proctology at New York Polyclinic, surgeon at Polyclinic hospital and Medical school and honorary consulting surgeon of the New York Cancer Institute. Doctor Fred H. Albee, president of the International College of Surgeons spoke on "Massive Resection of Bone Sarcoma with Immediate Bone Graft Replacement" illustrated by colored motion pictures. An open discussion was lead by Doctors Robert Andrews, Milton Bodenheimer and Leo Murphy.

The evening dinner guests included the visiting and local surgeons, staff of St. Francis Hospital and civic leaders.

CANCER CONTROL THROUGH STATE LEGISLATION

presented by
State Senator Dr. Charles Muzzicato,
Chairman of the Senate Committee on Public Health,
before a meeting of the Hudson Valley Guild of the International College of Surgeons Dec. 4, 1941, at Poughkeepsie, N. Y.

During the last decade there has been increasing recognition of the fact that cancer control is a *public* health problem. Prior to 1931, in only two states was there a cancer control program operating under the auspices of legislative action. Today, eleven states have cancer control programs established by statute. There are an additional 27 states which carry on some sort of activity designed to aid in the control of cancer,[1] but it is of the eleven states with laws that I wish to speak.

It has been observed that "In the absence of precise and well-authenticated knowledge regarding spe-

Part of a group attending dinner on the occasion of the Meeting of the Hudson Valley Guild of the International College of Surgeons at St. Francis Hospital, Poughkeepsie, New York, December 4th, 1941. Standing rear, left to right, Dr. A. W. Thomson; Charles Gilbert Spross; Dr. James J. Toomey; Dr. Frank C. Yeomans, of New York City; Dr. James F. McCambridge, chairman of the hospital's host committee; Frank M. Doran, alderman-at-large-elect of Poughkeepsie; Dr. Harold A. Benson; Dr. M. Bodenheimer, New York City; Dr. Clifford A. Crispell; seated, left to right, Dr. John Duff, of New York City; Dr. George S. Foster, Manchester, N.H., Dr. Fred H. Albee, of New York City, president of the International College; Dr. Max M. Simon, president of the Hudson Valley Guild; Dr. A. A. Berg of New York City; senior state regent of the International College; Dr. Duncan MacPherson, of New York City, specialty regent of the International College; City Judge Charles A. Corbally.

cific etiology, the basis of cancer control measures must necessarily be the relatively lower case fatality obtained when cancer is recognized and treated *before metastasis has occurred* [2]

The action of these eleven states indicates that this is a sound basis for a program Dr Leonard A Scheele past assistant surgeon of the National Cancer Institute, found in a recent survey that the broad organized attack on cancer today can be divided roughly into the four following activities

1 Efforts to educate the layman
2 Efforts to keep the physician aware of the importance of constantly looking for cancer in his patients up to date in the newer knowledge of diagnosis and treatment, and cognizant of *his ability or his limitations in caring for cancer* patients
3 Stimulation and aid in the organization of treatment and diagnostic centers and provision of direct or indirect public assistance to the needy in obtaining adequate care
4 Research in statistical and fundamental scientific fields relating to cancer and in improving diagnosis and therapy [3]

The states with such cancer control programs are *not widely distributed These states are* Maine, Vermont, New Hampshire, Massachusetts, Connecticut, and New York in the northeast, Georgia and South Carolina in the southeast, Illinois and Missouri in the midwest, and Texas in the southwest Only three state programs—New York, Massachusetts and New Hampshire—are more than six years old, and Maine and Texas passed enabling legislation just this year [4]

Administratively, cancer control is handled most commonly through the creation of a division or commission of cancer control within the state department of health, as in New York State, although a few states have set up separate cancer commissions [5]

Turning from this general survey of state sponsored programs to a brief examination of methods and objectives in the four lines of activity mentioned previously, I have found that education of the laity is being carried on through lectures, radio programs movies, pamphlets, posters and other exhibits, articles in newspapers and other periodicals etc The aim of this activity is to get the layman to seek medical advice promptly and frequently Through the media listed an effort is being made to substitute an attitude of cautious alertness for the all too common attitude of ignorance superstition and fear with which cancer is regarded by the public Warning is given about potential causes of cancer, and information is disseminated about those danger signals which if observed, should be brought to the attention of a physician The location and methods of admission to, and payment for treatment facilities are publicized [6]

These activities are designed to bring the patient to the physician Most of these states also carry on programs of post graduate professional education, for we doctors too *may have much to learn The* methods employed here consist of clinics, refresher courses, issuance of bulletins, pamphlets and, in Massachusetts, Connecticut and New York, for example, comprehensive handbooks "No State health agency attempts to do professional education except in close cooperation with, and at the direction of, its state Medical Society "[7]

In addition to these educational activities, the state control programs attempt to provide adequate diagnostic and treatment facilities All of these states have or plan to provide, free tissue diagnostic services [8] More than 300 tumor clinics approved by the American College of Surgeons have been established *in the United States* [9] *In New York State,* outside of New York City, there are 38 tumor clinics, approved by the Cancer Control Division of the Department of Health which the state has helped to establish [10] These New York clinics are so distributed that one of our legislative commissions was able to say in 1939 "Now no cancer patient will need to travel more than 50 miles" to use them [11]

Three states have erected separate cancer hospitals [12] and the other states, except for Illinois and Maine where the programs are not yet fully established, have followed a practice of aiding in the *establishment of approved treatment centers in already* existing public or voluntary hospitals thus minimizing the transportation problem [13] In all of these states the cost of treatment for needy patients is borne by the state—alone or with participation of the county or municipality of the patient's residence

While the three activities already mentioned are aimed at treatment and cure state control programs are also functioning along a fourth line—research This work may be summarized briefly

> One state health department has a biological research laboratory, and another subsidizes fundamental cancer research in a medical school Six states have other research programs including studies of . . morbidity, mortality, and results of therapy, effectiveness of lay and professional education and related statistical subjects [14]

Because the history of most of these state programs is comparatively brief, I have made no attempt to evaluate their effectiveness While programs are possible without specific legislation under broad health laws existing in most states, there are definite advantages in special legislation Such action (1) Focuses public attention on the problem, (2) Designates the measures to be taken thereby assuring that they will be taken, (3) Obligates the state legislature to appropriate the funds necessary to carry out the intent of the law [15]

It is clear, I think, that much remains to be done New York has probably done more in cancer control than any other state, yet, in 1940, approximately four times as much money was expended for tuberculosis control as for cancer control[16] not that tuberculosis is getting too much, but cancer control should get more In view of the rising incidence of cancer because of better diagnosis and increasing age level of the population, more generous appropriations must be made

We physicians can feel proud of the role we have played in this campaign The National Cancer Institute points out that "Almost without exception the legislation already passed was conceived by cancer conscious physicians and was sponsored by State Medical Societies "[17] However, we must not *rest on our laurels Control programs exist, to be* sure, but the problem is not yet solved

And before closing may I add that while it is beyond question true that there is no place for politics in the practice of medicine, cancer and other disease control programs of wide magnitude can be more effectively carried out if the medical profession would take more active interest in politics It is because of this need that I was influenced to accept membership in the State Senate The personal sacrifices that we physicians may have to make, by being in our State Government, will be worthwhile if we can make some contribution to the cause of public health, particularly to the problem I have been discussing—Cancer Control Through State Legislation.

---

[1] Scheele, Dr. Leonard A. *Present Status of State Cancer Control Programs* address before American Public Health Association Meeting, Oct. 15, 1941 p. 6

[2] Report of the New York Legislative Cancer Survey Commission, (Leg. Doc., No. 64, p. 15.)

[3] Scheele, *Op. cit.*, p. 2.

[4] *A Resume of State Cancer Control Programs*, issued by National Cancer Institute Feb. 1940. Supplemented to April, 1941. Scheele is authority for including Texas.

[5] *Ibid.*, p. 1.

[6] *Ibid.*, passim.

[7] Scheele, *Op. cit.*, p. 8.

[8] *Resume*, passim.

[9] Scheele, *Op. Cit.*, p. 9.

[10] *Outline Material on Cancer*, pub. by Medical Society of State of New York, Oct. 1, 1941, pp. 13 and 14.

[11] *Medical Care in New York State, 1939*. Legislative Document, (1940) No. 91, p. 94.

[12] Scheele, *Op. cit.*, p. 9.

[13] *Resume*, passim.

[14] Scheele, *Op. cit.*, p. 9.

[15] *State Cancer Control Laws*, National Cancer Institute, no date. p. 1.

[16] *Budget Message*, 1941, Vol. I, passim.

[17] *Resume*, p. 1.

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The officers of the Hudson Valley Guild of the International College of Surgeons are:

Max M. Simon, President
Harold A. Benson, Vice-president
Clifford A. Crispell, Secretary

MEETING OF THE INDIANA STUDY GUILD, I.C.S. OF JANUARY 21, 1942

The first meeting of the year 1942 of the Indiana Study Guild was held on January 21st, at the new Emhardt Memorial Clinic, in Indianapolis, under Dr. John W. Emhardt.

The subject: ''Traumatic Wounds Sustained in Combat'' was ably presented by Capt. J. L. Lamey, M.C., U.S.A. Dr. Lamey brought out some important and interesting facts on the effects of modern arms on the human body, the types of injury, principal points in treatment, diagnosis of shock, employment of blood plasma, the use of chemotherapy in wounds, etc. An interesting informal discussion followed.

The Indiana Study Guild is rapidly becoming war conscious and is swinging into the spirit of military surgery, recognizing that from now on and for some time to come we will be called upon to perform services for our country and for the defenders of our country. For this type of service, we must be fully prepared and ready.

In Indianapolis we are fortunate in having a group of medical officers stationed at Fort Benjamin Harrison, headed by Col. J. W. Bowers, F.I.C.S., who are cooperating fully with the Indiana Study Guild and are bringing to us up to date information on the advancement on military surgery.

Simon Reisler, M.D.
Secretary Indiana Study Guild
International College of Surgeons

MINUTES OF THE FIRST ORGANIZATION MEETING OF THE WYOMING GUILD OF THE INTERNATIONAL COLLEGE OF SURGEONS

The organization Meeting was held at the Gladstone Hotel, Casper, Wyoming, on February 8, 1942, at 10:00 A.M. The meeting was called to order by the Senior Regent, Dr. W. Andrew Bunten of Cheyenne, Wyoming. The Senior Regent discussed the organization of the College in detail bringing out important points as given in the Constitution and By-Laws in order to review for the Members and prospective Members present the purpose of the International College of Surgeons. Following the discussion by the Senior Regent the meeting was thrown open for discussion and a number of questions were asked by the Members and prospective Members present.

Dr. Harvey suggested that, inasmuch as the Senior Regent had worked assiduously in organizing the College in Wyoming it should be his honor to be the First President of the Study Guild. Dr. Bunten stated, however, that he did not want to hold any office at the present time inasmuch as his work as Senior Regent would occupy a great deal of his time and he would prefer that the various officers be elected from the other Members of the Group present. Following this suggestion Dr. H. L. Harvey of Casper, Wyoming, was nominated and duly elected to the Presidency; Dr. Victor R. Dacken of Cody, Wyoming, was nominated and duly elected to the Vice-Presidency; and Dr. Lial S. Anderson of Worland, Wyoming, was nominated and duly elected to the office of Secretary-Treasurer. Each of the above officers accepted the office to which they were elected and agreed to serve to the best of their ability during the coming year.

It was decided that the first Study Guild should be held in Casper, Wyoming, this being a central point in the State, and the best time to hold the meeting would be immediately following the National Meeting of the College in Denver, Colorado. Inasmuch as the Senior Regent wished to discuss certain matters pertaining to the first Guild Meeting with some of the National Officers suggested that we tentatively plan to hold the meeting at the place and on the date above mentioned, the final date and type of meeting to be determined after further correspondence with the Director of Guilds.

Lial S. Anderson, M.D.,
Secretary-Treasurer,
Wyoming Guild, I.C.S.

MEETING OF THE NEBRASKA GUILD OF THE INTERNATIONAL COLLEGE OF SURGEONS

''The Nebraska Guild will hold their semi-annual meeting in Lincoln, Nebraska during the month of April. The exact date and place will be announced and programs will be sent in due time.

The Dr T F McCarthy endowment at the Creighton University Medical School under which members of the College may do research is being used by a good number of the affiliates in Nebraska This is a very fine opportunity and we are glad several are taking advantage of it.''

JOINT MEETING WISCONSIN CHAPTER INTERNATIONAL COLLEGE OF SURGEONS AND MILWAUKEE SOCIETY OF CLINICAL SURGERY

Tuesday, March 24th, 1942

OPERATIVE CLINICS—
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Surgery
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W J Carson J G Garland
G S Flaherty J J Gramling, Jr

Eye Ear, Nose and Throat
B F Churchill E M Rice
F J Schubert

Obstetrical Surgery
R W Roethke Elmer Gramling

Bone and Joint Surgery
L D Smith John Dieterle
J F Zivnuska

Urological Surgery
W M Kearns Robert Erwin

Luncheon at the University Club 1 15 P.M
Afternoon Program 2 30 P M
Karl Schlaepfer Samuel Higgins
G V I Brown
Dinner at 6 P M
Desiderio Roman, President elect, International College of Surgeons, Guest Speaker

THE FLORIDA POST GRADUATE STUDY GUILD OF THE INTERNATIONAL COLLEGE OF SURGEONS

The initial meeting will be held March 13, 1942 at the Flamingo Hotel, Miami Beach, Florida Dr Fred H Albee and Anthony Joseph Mendillo will be among the speakers

Ralph Gowdy, M D,
Secretary Treasurer,
Florida Post Graduate Study Guild

CHEMOTHERAPY IN SURGERY

Sir John Fraser comments on the role of Chemotherapy in relation to "Wound Infection and Accidental Wounds," in the Edinburgh Medical Journal (Vol XLVIII No 12, December, 1941) as follows

"There is great and unceasing interest in the value of the sulphonamide compounds as prophylactic media Comments are accumulating, they are both enthusiastic and disparaging, but on the whole the impression is growing that certain of these compounds when introduced into accidental wounds offer valuable protection against infection A variety of these substances is available—sulphanilamide, sulphathiazole, sulphapyridine, sulphadiazine, sulphamethyldiazine, sulphanylguanidine, sulphacetamide—and so active are the chemists that new compounds are constantly being added to the already considerable list It seems that when these compounds are placed in an infected wound their anti bacterial action is exerted in two ways, a bactericidal or bacteriostatic effect upon the organism and a stimulus of a tissue non specific defence mechanism The most effective compound will be that which exerts its influence along both these lines in the most marked degree, and research is proceeding to establish with accuracy the value of the respective substances.

During the past two years I have applied one or other of these drugs to all accidental wounds and to many types of surgical wound where infection cannot be avoided I am satisfied that on a general basis the procedure has outstanding value, the difficulty being to discriminate and to choose the drug which is most effective My knowledge on this important point is incomplete, but the impressions are crystallising The preparations of which I have most experience are sulphanilamide, sulphapyridine sulphathiazone, and sulphacetamide, and my appreciation of their values is as follows Sulphanilamide is uncertain in its local bactericidal effects except in streptococcal infection, where it is effective it is not associated with any degree of reaction in the tissue defence mechanism Sulphapyridine is more effective in its bactericidal effects, but it appears to act as a local irritant in degree which inhibits the local defence mechanism of the wound Sulphathiazole is bactericidal to [illegible] streptococci and staphylococci its effects on [illegible] clostridia are uncertain In its effects on [illegible] tissue there is a moderate degree of reaction [illegible] a significant feature is the stimulation of a [illegible] body reaction which undoubtedly increases [illegible] defence mechanism Sulphacetamide (Albuci[illegible] [illegible] is an efficient bactericide, its solubility is [illegible] lar advantage, its application is associ[illegible] [illegible] transudate of fluid from vessels and th[illegible] [illegible] a valuable effect upon the wound, while [illegible] stimulate the development of the [illegible] mechanism All th[illegible] [illegible], my [illegible] tween the sulphacetamide and sulph[illegible] leaning towards the [illegible]"

BOOK REVIEWS

Functional Pathology: Leopold Lichtwitz, M.D. Chief of the Medical Division of the Montefiore Hospital; Clinical Professor of Medicine, Columbia University, New York. Cloth, 567 pp., 167 illustrations. Dollar 9,75 Grune and Stratton, New York.

PROGRESS in medical Science today is characterized largely by the development of specialized knowledge. We are therefore apt to approach with a certain degree of skepticism a book, which in the limited space of 567 pages proposes to deal with all the important problems of functional pathology. The thought that such a book cannot be much more than a textbook for students, similar to those on eral pathologic anatomy, is not unjustified. How- , a study of this book will soon dispel such s. It will bring home to the reader the im- nce of a synopsis at a time when medical ce is absorbed in specialized study of individ- organs. Succint though this presentation is, author manages not only to give in detail our esent factual knowledge and its significance in the light of clinical experience, but he touches, with particular incisiveness, on the problems still shrouded in obscurity. Perhaps, the greatest merit of the book is that in addition to presenting mature and critical knowledge it also formulates new research problems which will prove stimulating to research workers in the laboratory as well as in the clinic. The author commands international literature and his historical observations which preface each chapter are particularly worthwhile. The surgeon will find particularly interesting the chapters on "Functional Pathology of the Thyroid Gland" "Mechanism of the Manifestations of Graves' Disease and the Interrelations between the Thyroid and the other Endocrine Glands" "Mechanism of Defense" "Goiter," "Iodine Therapy in Thyroid Disorders" "Hyperthyroidism" "Mechanism of Arthritis" "Mechanism of Calcification and Decalcification" "Essential Hypertension" "Angiospastic Diathesis. Migraine."

The rest of the book is equally worth reading. The book is written in clear and simple language, and in a fresh, direct style. The make-up of the book is good, though some of the illustrations might well be replaced by better ones.

Surgery of the Heart. By E. S. J. King, M.D., M.S., D.SC., F.R.C.S. (England) F.R.A.C.S., Honorary Surgeon to Out-Patients, Royal Melbourne Hospital. Pp. 728 with 266 Illustrations. $13.50. Baltimore, Williams and Wilkins Co. 1941.

THIS monogram written by a surgeon with an excellent knowledge of physiology and pathology describes in Section one—Embryology, Anatomy, Comparative Anatomy, Physiology, Pathology, Radiology and Electrocardiography.

In Section two, the treatment of cardiac diseases is divided into 3 parts, (1) General methods of surgical approach and the various principles on which they are based; (2) Experimental work; and (3) The various diseases and their treatment.

The observations made on pathological material and experimental surgery with clinical cases at the University of Melbourne was presented as the Jacksonian Essay of the Royal College of Surgeons in 1938.

King gives an excellent description of all the operations thus far used on man with a fair appraisal of the results, collected from the World's literature.

With the increasing interest in the "Disease of Doctors" and the frequency of injuries to the heart in War, this book is an excellent addition to every surgeon's library.

W. J. Carson

Synopsis of Genitourinary Diseases, by Austin L. Dodson, M.D., F.A.C.S., Third Edition, with 112 Illustrations. Published 1941, C. V. Mosby Company, St. Louis.

THIS book is exactly what it purports to be, a synopsis of genitourinary diseases,—but it is a good synopsis. The author has succeeded in saying much in very few words and has covered considerable ground within the limits of a pocket size volume.

As no attempt has been made to describe technical or surgical details, the volume evidently is intended for the special use of students and general practitioners and it serves the purpose admirably. The present volume is the third edition published in eleven years, which is a good indication of its quality.

Changes have been made throughout the book, but mainly in the chapter on the etiology of urinary calculus, to conform with the latest developments in this field. Likewise the new chemotherapeutic agents of the sulfonamide group have been given appropriate attention. The volume is a conservative review of our present knowledge of urology brought up to date.

The typography is good throughout but somewhat difficult because of its compactness. There are few typographical errors, mostly unimportant, but the dosage of ammonium chloride, "15 to 20 grams 4 times a day" (page 52), is likely to prove embarrassing to the physician who follows it literally. Fortunately the error is corrected on page 111, where grains instead of grams are correctly stated.

On the whole, however, the book is a safe and useful guide and does credit both to the author and his publisher.

A. L. Wolbarst

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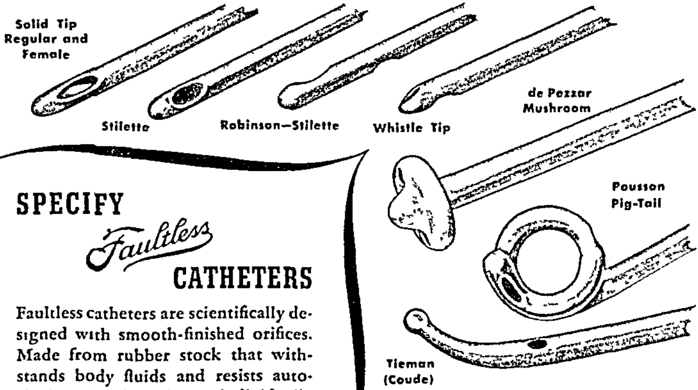

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The Journal of the International College of Surgeons

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There were but a few drops of drainage and the wound healed perfectly.

The question may well be raised as to why we are using sulfathiazole in all of our surgical cases. The end results are probably the best answer. To date, not a single instance of an infected wound has occurred in a clean surgical case. I will concede that in this era of modern asepsis clean wounds should not become infected, but even under the most careful technic, one occasionally has this misfortune. If by this procedure one can prevent but a single instance or two during the course of a year, it should be worthwhile. When an infection develops following thydroidectomy, for example, the patient may be confined to the hospital not for days, but weeks.

Serum has been relatively uncommon but has not been entirely eliminated. It certainly has not been increased as has been the experience of some writers. My feeling is that the serum is not the result of the sulfonamides so much as it is due to its method of application.

Reports on the use of the sulfonamides at Pearl Harbor by Cloward, Long and Ravdin, and Moorehead emphasized the great value of chemotherapy in preventing wound infection. Most emphasis appeared to be on the efficacy of sulfanilamide, not a great deal being said about the use of sulfathiazole, and a few reports that have come to my attention discussed the use of the sulfonamides within the peritoneal cavity. Thus Cloward reported sulfanilamide was of value not only in scalp and skull wounds but also in the missile tract in the brain. His preference for sulfanilamide was based on the report of Goodwin and Findley. Their experimental studies showed that sulfanilamide was absorbed more rapidly into the blood stream than any other sulfonamide drug. Long and Ravdin reported on the startling efficacy of sulfonamides in open wounds, and Moorehead states that purulent exudate was practically absent from the wounds.

In an effort to crystallize opinion regarding some of the controversial points on the use of the sulfonamides in surgery, a questionnaire was sent recently to twelve leading American and Canadian surgeons, and a summary of their reports was presented at the Southeastern Surgical Congress in Atlanta, Georgia, March 11, 1942. The surgeons in this group were Fred Rankin, Lexington, Kentucky; Verne Hunt, Los Angeles, California; Vernon David and Raymond McNealy, Chicago, Illinois; Mont Reid, Cincinnati, Ohio; Thomas Orr, Kansas City, Missouri; Waltman Walters, Rochester, Minnesota; Henry Cave, New York, New York; Robert Sanders, Memphis, Tennessee; Claude Hunt, Kansas City, Missouri; Gordon Fahrni, Winnipeg, Canada, and Fred Bailey, St. Louis, Missouri.

This group was considered to be a representation of all surgeons outstanding in their localities and of national reputation. McNealy reported that he had not had the occasion to use the sulfa drugs in conjunction with surgery. Walters withheld his opinion on many questions pending a study of a control group.

They were asked the following questions:

1. Are you using any of the drugs of the sulfa group intraperitoneally?

All eleven replied "yes."

2. If so, what drug or drugs and how much?

Of ten who answered, nine stated that they were using sulfanilamide; of these, two were using sulfathiazole also; Claude Hunt of Kansas City preferred sulfathiazole alone (in this respect agreeing with the author).

The dosage varied from 4 to 12 gm. of sulfanilamide, depending upon the type and severity of the case. The average dose of sulfathiazole used by Claude Hunt, Fahrni, Sanders and myself has been 8 gm Verne Hunt stated

"We have closed the abdomen without drainage in many instances where formerly we would have instituted drainage We have been very favorably impressed with the intraperitoneal use of sulfonamides and have confined our usage of these drugs practically entirely to sulfanilamide We have more often used 10 gm than 5 gm, and at no time have we seen any untoward results from the use of this amount of the drug "

Rankin reported its use of particular value in cases of intestinal resection Cave, of the Roosevelt Hospital in New York, where the first successful report of the intraperitoneal use of sulfanilamide was reported by Mueller and Thompson, said

"We prefer sulfanilamide We have used sulfasuxadine and sulfathiazole, but are going back to sulfanilamide as it does not cake up We use, as a rule, about 8 to 10 gm, depending upon the amount of infection "

3 What type of cases, if used?

Of nine replies, seven stressed the value of the sulfa drugs in intraperitoneal infections or acute peritonitis, the result of a perforated viscus

Claude Hunt stated:

"I have used both sulfanilamide and sulfathiazole with excellent results in cases of ruptured appendix, perforated ulcers and in gangrenous gallbladders In gastric and colon resection, sulfathiazole is sprinkled along the suture line as a prophylaxis against possible infection Sulfathiazole appears to give good or better results with fewer complications "

Cave used the sulfonamides in acute diffuse peritonitis and local abscesses following acute suppurative appendicitis, also in any kind of intra abdominal intestinal resection and around perforated gallbladders, following hysterectomy, before peritonealization of the stump of the cervix, etc

4 Has it lowered mortality?

Of ten replies, seven answered "yes " Bailey said "probably;" Orr was not certain; Walters wanted further study before replying

5 Has it decreased complications?

All felt that it had

6 Has it affected drainage?

The following replied "yes " Sanders, Claude Hunt, Verne Hunt, Rankin, Fahrni, Reid and Bailey David and Orr were not certain it had affected drainage Cave probably misunderstood the question

7 Are you using it in wounds?

The following replied "yes " Sanders, Claude Hunt, David, Fahrni, Reid, Orr and Bailey Walters and Verne Hunt replied "occasionally," and Rankin said "no " Cave said "We are using it only where there might be a potential infection, as in a very fat anterior abdominal wall or in infected tendon sheaths and in potential bone infections "

8 Are you using it in clean cases as a prophylaxis against infection?

All stated they were not using it routinely in clean wounds

In a previous paper dealing with the intraperitoneal use of sulfathiazole, I stated that this drug had been used in every patient operated on by the writer since April, 1941, either in the incisions, intraperitoneally, intravenously or by mouth The object of using sulfathiazole in 100 per cent of the operations was to ascertain as soon as possible whether the brilliant results obtained early in our experience might be continued in a larger series of cases In this study it was shown that in 161 major operations performed on clean cases no infections occurred This procedure gives rise to a point for discussion It has been stated will be considerably curtailed by the use of the sulfonamides. Until the subject is further clarified, one should not abandon well accepted procedures.

In this series of 370 cases only two complications were observed — a mild skin rash and a transitory hematuria. The literature, however, contains numerous reports of sequelæ developing following the use of sulfonamides by mouth in rather large doses in both medical and surgical conditions, as well as when the drug is used a second time after a free interval. The use of sulfathiazole, as reported in this study, by an initial dose in the wound or within the peritoneal cavity appears to be attended with little danger. A further study of its daily postoperative use by mouth or intravenously is being conducted.

By decreasing and eliminating the need for drainage, by preventing and successfully combating wound infection, postoperative cystitis and other sequelæ, sulfathiazole has shortened convalescence and permitted patients to be up sooner. In turn, it has decreased the incidence of thrombophlebitis and embolism.

A summary of a questionnaire recently sent to twelve leading American and Canadian surgeons regarding some controversial points on the use of the sulfonamides in surgery is presented.

The average dose of sulfathiazole used intraperitoneally was 8 gm. It was used in the powder form or with sterile saline solution as a vehicle. Chemotherapy will never replace good surgery, but it has already proved to be an adjunct par excellence.

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SUMARIO

Se describe uña serie de operaciones, 370 mayores y 128 menores, en las cuales se usó sulfatiazol, ya sea en la incision, en la cavidad perintoneal, o bien administrado por la boca o por inyeccion intravenosa. En ninguno de los casos asepticos en que esta droga se usó de una manera profilactica sobrereino infeccion en la herida. En cerca de 300 casos de colecistectomia, apendectomia, histerectomia, etc. se usó el sulfatiazol en la cavidad peritoneal, sin ningúna mala consecuencia. El uso del sulfatiazol, tal como se describe en este trabajo por una dosis inicial en la herida o en la cavidad peritoneal, no parece presentar ninguin peligro.

RÉSUMÉ

L'auteur rapporte une série de 370 grandes et 128 petites opérations chirurgicales dans les quelles on employa le sulfathiazole ou dans l'incision, ou dans la cavité peritonéale ou par voie orále ou intraveineuse. Incun cas noninfecte, dans l'equal cette drogue fut employée ne developpa de l'infection dans la plaie. On employa le sulfathiazole dans la cavite péritonéale dans à peu près 300 cas de cholecystectomies, d'appendicectomies, d'hystérectomies, etc. sans résultats désagréables. L'emploi du sulfathiazole comme dose initiale dans les plaies ou dans la cavite peritonéale paraît être accompagné par peu de danger.

Выводы

В серии 370 крупных операций и в серии 128 мелких операций сульфатаязол употреблялся или в разрезе, в брюшной полости, или-же перорально, или через вену. Там где сульфамаязол был употреблен профилактически, не намечено было инфекции. Сулфамазол был употреблен в 300 случаях холецастекомий, аппендектомий, гистеректомий и т. п., без никаких нибудь осложений. Как видно, можно употреблять сульфатаязол или в разрезе или в брюшной полости без опасности.

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Castless Ambulatory Method of Treating Fractures*

ROGER ANDERSON, M.D., F.A.C.S., F.I.C.S.
SEATTLE, WASHINGTON

PROGRESS in fracture therapy, as in any field of science, is based on change in the current concepts of treatment. Castless ambulation for all types of shaft fractures would, at first thought, seem to be wishful thinking, but when certain principles are employed it becomes a reality of practical importance not only for war surgery but equally so for civilian practice.

The operating principles of this castless procedure are (1) to control the fracture by angularly inserting two transfixions into each fragment, and (2) to supply immobilization by connecting the two sets of transfixions with a slender rod. Anatomic studies have demonstrated that there is a safe door for transfixing both fragments of any one of the long bones. Furthermore, transfixation can be carried out without incision of the skin or preliminary drilling of the bone.

This method is applicable to any fracture of the long bones in any extremity, whether transverse, comminuted, or compound, and is effective even when the fracture extends into one of the distal joints. It is an ideal supplement to many orthopedic procedures, such as arthrodesis of the knee, non-union or mal-union operations, and length equalization and reconstruction operations. So comprehensive is its scope that the treatment of fractures of the long bones can at last be said to be standardized. Furthermore, standardization and simplification have been extended to the transfixation units themselves. For instance, the same unit can be used for the femur or humerus in the largest man or the smallest woman. The units have been so devised that they hold half-pins, through-and-through pins, or wires. An external safety stop makes possible the use of thinner pins than previously employed. As these fracture units can be used for all fractures of either extremity, and will hold any type of transfixion, they are referred to as *universal* fracture units.

The units and fixation rods, as illustrated below, are constructed of a rust-

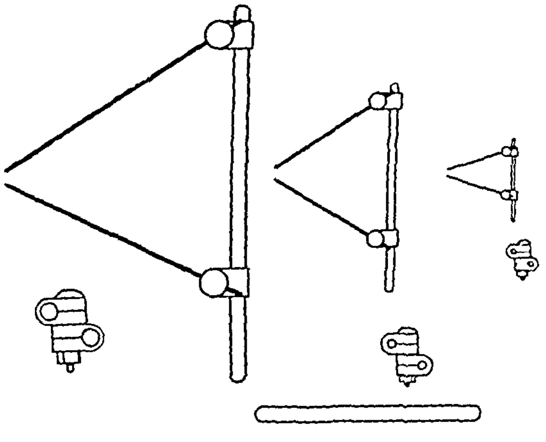

Fig. 1. Three sizes of *universal* fracture units. *Large size*, used chiefly for femur, tibia and humerus, and in the forearm of muscular men. The fixation rod is illustrated below and to the right is the fixation rod clamp. *Medium size*, used chiefly for fractures of the forearm and for Colles' fractures. *Small size*, used for metacarpal, metatarsal, phalanx, clavicle and mandible.

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*Presented at the Seventh Assembly of the International College of Surgeons, Denver, Colorado, July, 1942.

less alloy, so light that the whole apparatus for immobilization of a fractured shaft of the femur weighs *only* twelve ounces.

TECHNIC

The skin area for transfixation is cleansed with soap and water, ether and, if desired, a weak solution of iodine. No preliminary cutting or pulling of the skin is necessary before inserting the pins. Two half-pins are angularly placed into each fragment. Small, dry dressings are spiked over the pins, a pin clamp is slipped over each half-pin, and then a

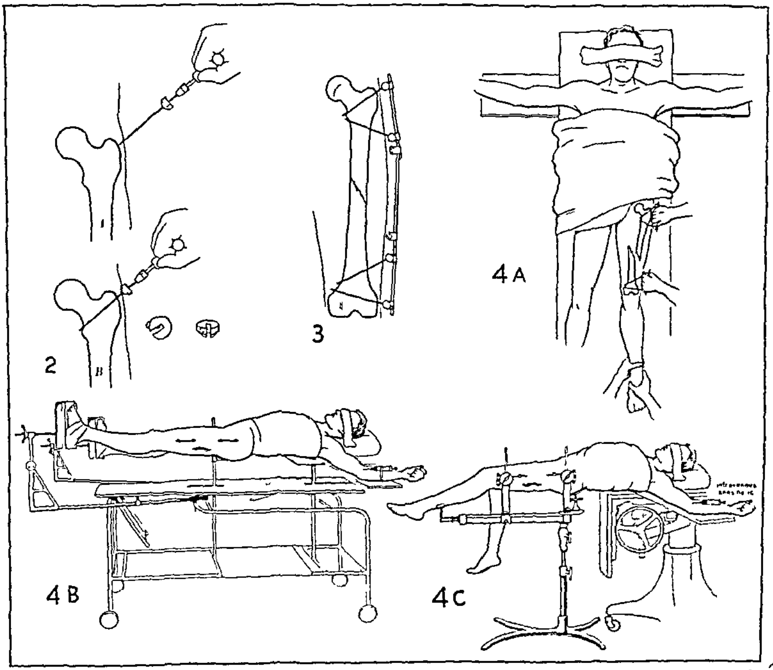
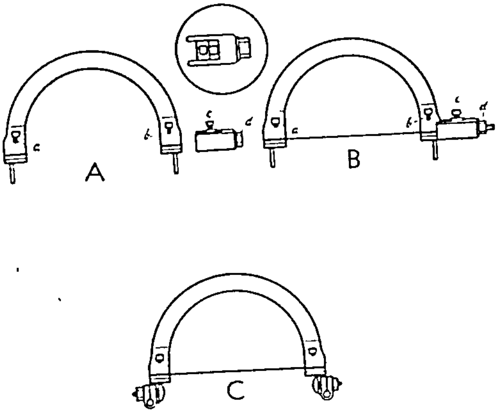


Fig 2 Earl safety stop which prevents plunging through or over insertion of the half pin When the point *of the pin contacts the shaft the stop is fastened to the half pin at a point the same distance from the skin as* the distance the pin travels through the bone This latter distance is estimated from the radiogram or clinical experience

Fig 3 Immobilization of femoral shaft fracture utilizing fracture units in the form of half

Fig 4 Photograph illustrating three ways force may be supplied for reduction (A)

(B) Fracture table reduction (C) Anatomic splint reduction



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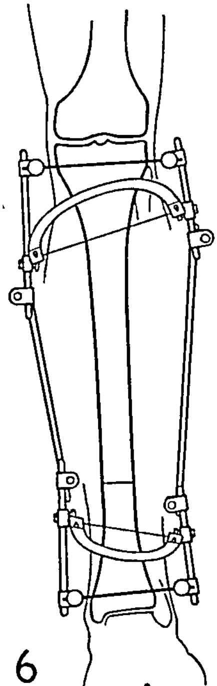

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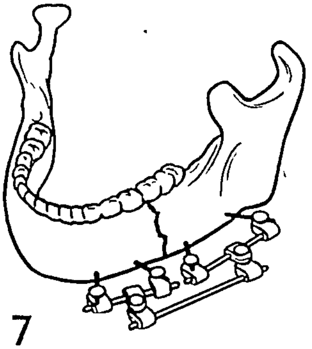

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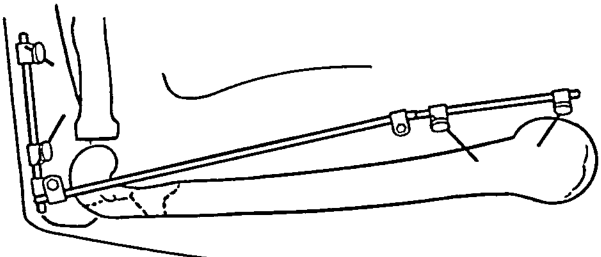

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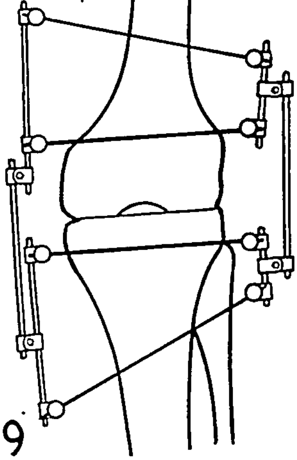

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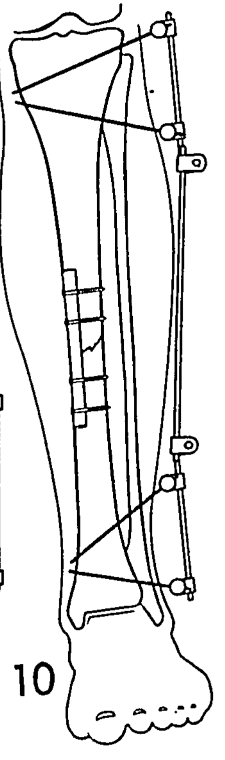

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Fig. 5. Wire tautnor constructed of alloy weighing only five ounces. The detachable wire tightener fits into the different sized tautnors. The stud pins on the tautnors are fastened into the clamps on the fracture units.

Fig. 6. Through-and-through Steinmann pin and Kirschner wire inserted angularly into each fragment and the fracture immobilized with fixation rod on each side. Four pins or four wires may be used equally well, but for transfixing the shaft it is best to use a wire or slender pin. Through-and-through transfixation is also feasible through the distal femur, superior ulna, os calcis, certain metacarpals, ilium and ligamentum nuchæ.

Fig. 7. Fractures of the mandible may be reduced by the Converse-Waknitz technic, employing the small fracture units.

Fig. 8. Fractures into the elbow, wrist, knee or ankle joint may be treated without change in technic.

Fig. 9. The fracture units lend themselves admirably as adjuvants to orthopedic procedures such as arthrodesing, reconstruction, or plasty operations, and by substituting threaded rods for the fixation rod, lengthening or shortening procedures may be accurately controlled.

Fig. 10. Universal units and rods can be employed also as supplementary immobilization following open reduction with bone grafting, wiring, or plating.

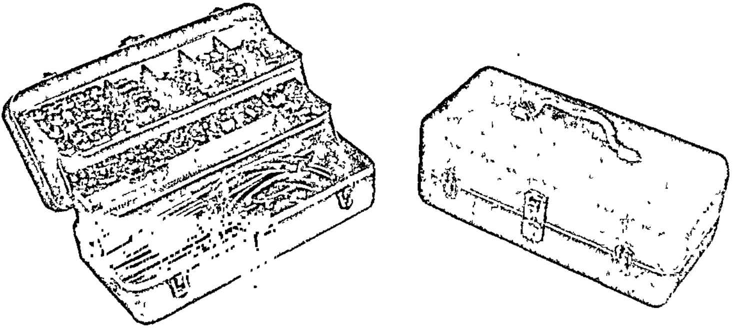

Fig. 11. The fracture technic has been so standardized and the fracture units are so compact and light that enough fracture units, clamps, fixation rods and tautnors can be held in this small kit to reduce and immobilize twenty-five shaft fractures of any type or location. The kit when filled weighs less than twenty pounds, and as both the case and units are rustless, the filled case can be sterilized by boiling in a pan of water.

universal rod is securely fastened into the pin clamps.

Reduction by direct control of the fragments is accomplished by manipulating the fracture units by one of three means: (1) manual; (2) fracture table, or (3) anatomic splint. We prefer the latter because each fragment can be directly and individually controlled by mechanical movements, operating upon the exact anatomic center; furthermore, both fragments are held rigid during the radiographic check-up. Through-and-through transfixation, where practicable, as in the distal femur, employs the same fracture units and operates upon the same principles. Kirschner wire can also be used without any change in technic, and the operator may insert one, two, three or four wires, according to his judgment.

Immobilization is quickly obtained by fastening the fixation rod to the two fracture units by the fixation rod clamps.

Compound fractures can be effectively treated, as reduction is positively immobilized by the rod so that thereafter all attention may be directed toward treatment of the soft tissue wounds by any method of choice. If Orr's method is selected, the obnoxious odor may be minimized as the plaster may be changed as often as is indicated without danger of losing apposition. A complicating gas infection can be readily approached for radiotherapy. Rod fixation also provides access for later sequestrotomy, skin grafting, and removal of foreign bodies.

As we all recognize, *callus* can be derived only from the blood stream. Thus it is evident that any improvement in circulation will naturally hasten the formation of callus. Ambulation with muscle contraction and contiguous joint movements cause an increased circ
blood and lymph. This sove
tage has not been *emphasi*
possibly because it was un

The words "castless" and "ambulatory" vividly portray the advantages of this method, and the physiologic and economic benefits are so numerous and evident that they need no further elucidation.

SUMMARY

A technic for a castless, ambulatory method of treating fractures of the long bones has been outlined.

SUMARIO

El tratamiento ambulatorio de todas las fracturas de las diafisis oseas se puede llevar a cabo, sin tener que practicar el enyesamiento, utilizando ciertos aparatos que consisten de tallos delgados conectados a ciertas unidades de transfixacion. Estas unidades han sido ideadas de tal manera que puedan asegurarse al tipo de alfiler o alambre de traccion que se quiera usar en un dado caso. Los tallos de fijacion son faciles de aplicar, aseguran la inmovilizacion rigurosa de los fragmentos, y pueden re-adjustarse con facilidad en los casos que se quiera cambiar la posicion de los fragmentos.

La reduccion de la fractura se hace de acuerdo con una tecnica semejante a la que el autor advoco anteriormente, como sigue: Dos alfileres de transfixion son introducidos directamente y en direccion angular en la substancia de cada fragmento: lo que se ejecuta sin tener que hacer antes una perforacion del hueso o una insicion previa de la piel. El tipo de la fractura y su localizacion determinan la clase de alfiler que se debe de usar. Los dos alfileres de transfixion introducidos en cada fragmento, cuando son conectados con su correspondiente tallo, constituyen lo que se llama una unidad de transfixion. Con la manipulacion correcta de estas dos unidades de transfixion se puede obtener la reduccion satisfactoria de la fractura. La inmovilizacion se asegura conectando las dos unidades de transfixion con uno o dos tallos de fijacion.

RÉSUMÉ

Le traitement ambulatoire de toutes les fractures des os longs peut être effectué de nos jours à l'aidè de tringles qui agissent en unissant de un agents de transfixion. Les èléments de ces tringles sont construités de facon à immobiliser des *demi-épingles des épingles entières* ou des fils de fer. Pour le traitement des fractures des os longs et, aussi, comme supplément de procédes orthopédiques les *moyens de transfixion sont nombreux*. Les tringles fixatrices s'attachent facilement, obtiennent une immobilisation sûre peuvent être facilement ajustées et permettent quand il y a lieu, changement de position des fragments de l'os fracture d'être réadjustees.

La technique de réduction est semblable à celle prèconcisée par l'auteur pour transfixion des fragments sans incision de la peau et sans perforation preliminaire de l'os on peut selon les indications employer des épingles des demi-épingles ou des fils de fer de Kirschner. Les deux transfixions fixées a la tringle constituent l'unite usant deux unites comme manche controleur, on reduit la fracture et on obtient l'immobilisation en fixant les deux unités au deux tringles fixatrices.

Выводы

Описывается амбулаторное лечение переломов цилиндровых костей, без гипсовой повязки, с помощью тонких соединительных стержней соединяющих отдельные части фиксирующего аппарата. Эти части (единицы) устроены так, чтобы содержать полу-болт, или-же болт (гвоздь), который проходит через всю толщину, или же проволоку. Это делает возможным выбор какойбы то ни было фиксации переломов длинных костей. Стержени накладываются легко, дают хорошую иммобилизацию и могут прилаживаться по нужде когда нужно изменить направление обламков.

Редукция производится так что две трансфикции проводятся углообразно в каждый осколок без нареза кожи

Употребляются полу-болты, болты, или проволока Киршнера Две трансфикции, привинтованные к стержению, составляют одны единицу. Редукция обломков делается употребляя эти две единицы как ручки. Оконечность иммобилизируется посредством соединения двух частей одним или двумя соединительными стержениями.

THE McCARTHY ENDOWMENT OF THE NEBRASKA POST-GRADUATE STUDY GUILD OF THE INTERNATIONAL COLLEGE OF SURGEONS TO THE CREIGHTON UNIVERSITY SCHOOL OF MEDICINE

This endowment was created by Dr. T. F. McCarthy and first announced at the Third International Assembly of the International College of Surgeons held in Mexico City in August, 1941. It provides post-graduate instruction in all of the basic subjects of surgery, surgical anatomy, gross and microscopic pathology, animal surgery, etc., without charge to any of the Affiliates of the International College of Surgeons or members of the Nebraska Guild.

A number of the Affiliates of the College have taken advantage of this privilege and are carrying on research in the anatomic and pathologic laboratories of the University of Nebraska.

The Object and the Value of the Pre-operative and Post-operative X-Ray Treatment in Carcinoma of the Breast

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ACCORDING to United States Vital Statistics, in 1920, there were 6,665 deaths from cancer of the breast, which had increased in 1929 to 10,204 deaths (53 per cent), and in 1939 to 14,868 deaths (123 per cent). During these 20 years, there was, of course, an increase in the total population and a progressive increase in the relative old age, but these figures indicate the seriousness of this problem. Since the average length of life before death from carcinoma of the breast is from three and one-half to four years, and since probably 20 per cent of all cases are permanently cured, we have a right to assume that approximately 50,000 women in the United States have cancer of the breast at the present time.

Much progress has been made in the treatment of carcinoma of the breast if one compares the present-day results with those obtained 50 years ago. At that time the operative mortality as reported from the Billroth Clinic was 23 per cent, and the three-year recoveries were only 4.3 per cent, while today, the operative mortality varies from less than 1 per cent to 5 per cent, and the five-year recoveries vary from 70 per cent in Stage I[*] to 23 per cent in Stage II (no longer encapsulated within the breast), and almost no recoveries in clinical Stage III. A very great advance was made, however, in the treatment of carcinoma of the breast in the last 50 years. This advance is due to the operation described by Halstead in 1894. However, in the last 40 years, the operative results in carcinoma of the breast have not been appreciably improved (Hutchison, and Lewis and Rienhoff).

The failures from surgery occur in those cases which have passed beyond Stage I, and occur in those in which the disease has become attached to the skin or has extended to the axillary lymph nodes (Stage II); and in Stage III, which includes those cases in which the disease has extended beyond the axilla, or in which the tumor tissue is fixed to the chest wall or the axillary tissues, or in which the cancer has invaded the skin, or in which the breast is edematous; and Stage IV, which includes those that have distant metastases.

Since 70 per cent of the cancers of the breast are cured if operated upon while the disease is strictly confined to the breast, our aim must be to see that all operations are performed while the disease is still in Stage I (small tumors strictly confined to the mammary gland). Unfortunately, only 10 per cent of the patients come to the surgeons in this early stage. To accomplish the best results by treating patients in this Stage I, the laity must be educated as to the dangers of lumps, lancinating pains and bloody discharge from the nipple. Likewise, the physicians must become more alert and more skilled in early diagnosis The early diagnosis of cancer of the breast, however is often difficult, and even in the case of those most skilled, there is a considerable percentage of doubtful cases The difficulty in making an early diagnosis is well illustrated by a report from MacCarty He has studied the records of 2 100 cases at the Mayo Clinic, in which a doubtful diagnosis was made in 21 5 per cent, and of these doubtful cases, the diagnosis was incorrect in 37 2 per cent If such difficulties arise in a large clinic with highly trained men, the problem must be much greater for the general practitioner who sees only a few cases in a year When in doubt, immediate consultation with an expert is advisable In this connection, it must be remembered, however, that rough and repeated examinations of the breast are dangerous (Holman)

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[*] The terms clinical "Stages" I, II, III and IV, are used to distinguish them from the microscopic malignant Grades 1, 2, 3 and 4.

I believe that the best results in the management of cancer of the breast will be obtained in all cases if there is a consultation among the family physician, the surgeon and the radiologist Fortunately, the radiologist can be of some technical assistance in the diagnostic problem by making a roentgenographic examination of the breast and the chest and the skeleton At times, distant metastases are found in a supposedly early lesion Finally, a wide excision of the tumor or a mastectomy for microscopic diagnosis may be the most conservative treatment of a doubtful case Dawson and Tod after examination of a large amount of material say "In women over thirty five years, simple mastectomy with immediate examination of the gross pathology of the breast and submission of the tissue for histologic opinion is the method of choice"

RECOMMENDATIONS IN TREATMENT

Stage I—In the treatment of cancer of the breast in Stage I, we should recommend operation at once, and at present we can properly limit the treatment to operation Pre operative irradiation will do no harm in these early cases, but it has not been proved of marked value The records show that if a patient is operated upon while the tumor in the breast is freely movable, and the disease is confined strictly to the breast, 70 per cent or more recover We must always remember that it is possible that a very small tumor in the breast may be associated with distant metastases at the time of the first examination or the original operation Such metastasis accounts for the surgical failures in Stage I, when the recurrence is not local When such distant metastasis is found, the case must, of course, be classed in Stage IV In 29 per cent of the cases studied by Harrington, in which lymph nodes were not palpable and were supposed to be in Stage I, metastases were found at operation When axillary metastases are found at operation, the case must be classified in Stage II, and post operative irradiation should be given, even if no pre operative irradiation has been used Unfortunately, probably less than 10 per cent of all breast cancers come to the surgeon in this early stage (I), and only 20 per cent of the *operable* cases (Harrington) are still in Stage I

Stage II—Cancer of the breast in Stage II should be treated by *pre operative irradiation, surgery,* and *post operative irradiation* However, no combination of treatment can compensate fully for delay in diagnosis or operation, while the disease is still in Stage I Of 2 396 operable cases (Stages I and II) coming to the Mayo Clinic (Harrington), 80 6 per cent were in Stage II Judged [illegible] general surgical statistics from large clinics, as reported in [illegible] clear, 23 per cent of th[illegible] greatest problem is [illegible] to be alive [illegible] microscopic Grad[illegible] ation is [illegible] clinical Stage II This [illegible]

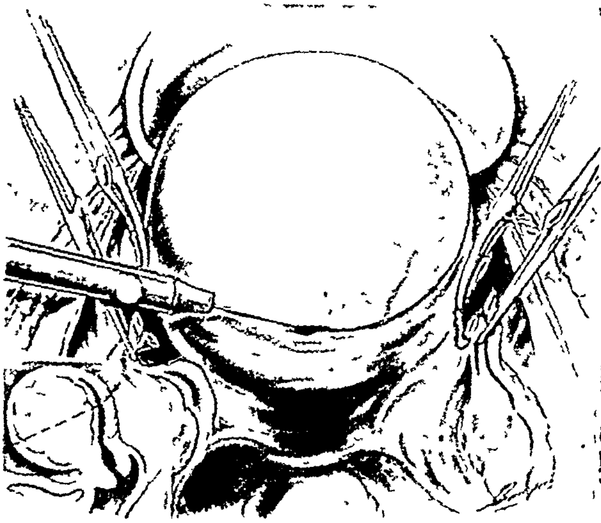

Fig. 1. Sección, prévia hemostasia con pinzas de Faure, de ambas trompas, ligamentos redondos y ligamentos útero ováricos

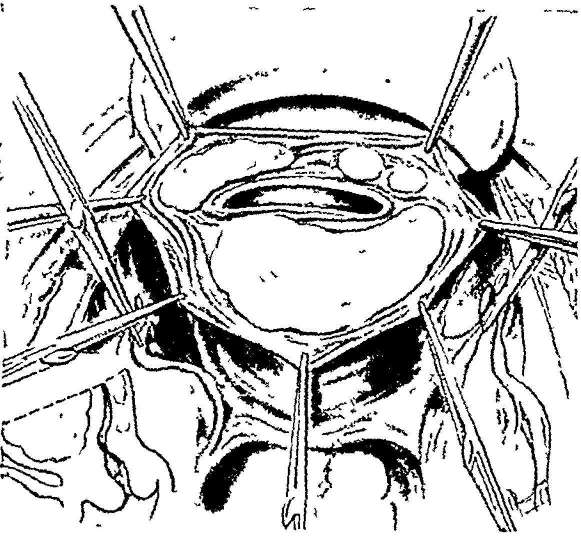

Fig. 2 Amputación transversal del cuerpo con bisturí eléctrico, por arriba de donde se ha hecho la hemostasia de las uterinas, sin reparar en los miomas que pueden interponerse y que son seccionados ó enucleados, según la conveniencia

miomectomias debido á la hiperplasia difusa existente alrededor de los sitios donde se hallaban implantados los nódulos, y, que los "capitonages," hechos en los espacios vacios que quedaron despues de efectuada la enucleación, se encargan á la vez de aumentar.

Es por tales asertos—ratificados tras una ya larga experiencia—que no dudamos estar en lo cierto al decir que, para justipreciar mejor las bondades de la miomectomia, solamente debemos indicarla en aquellas pacientes que, no habiéndo tenido hijos y deseando tenerlos, no hayan llegado á los 40 años de edad; pues en enfermas con várias hijos y aun con menos años, no titubeamos en practicar siempre la miometrectomia, que la hacemos extensiva también para las que llegan á los 45 años, época esta de la vida que en nuestro ambiente consideramos como inicial de la menopausia y que, por tal motivo, á partir de ella, nos obliga a reemplazarla por la histerectomia.

He aquí la técnica de la miometrectomia:

1. Sección, prévia hemostasia con pinzas de Faure, de ambas trompas, ligamentos redondos y ligamentos útero ováricos (Fig. 1).
2. Rechazo de estos elementos hácia afuera, y disección del colgajo peritoneal anterior, lo que permite hacer la ligadura de las uterinas
3. Amputación transversal del cuerpo con bisturí eléctrico, por arriba de donde se ha hecho la hemostasia de las uterinas, *sin reparar en los miomas que* pueden interponerse y que son seccionados ó enucleados, según la conveniencia (Fig 2).
4. Vaciamiento miometrial ó miometrectomia propiamente dicha (preferentemente con bisturí eléctrico) de las paredes uterinas, como lo esquematizan las Figuras 3 y 4; llevandose esta excéresis lo más hácia abajo posible, para extirpar así los pequeños nódulos que podrían existir, no apreciables á la vista y á la palpación.
5. Síntesis, con puntos sero serosos de catgut, de los bordes de los colgajos superficiales mioperitoneales, incluyendose en ambas extremidades las porciones internas de ambas trompas, ligamentos redondos y ligamentos útero sacros (Fig. 5). El cierre de los colgajos internos miomucosos (cilindro interno endomiometrial) que antes haciamos previamente y en las *mismas forma*, por considerarlo innecesario, no lo hacemos hoy.
6. Peritonización (Fig. 6).

Tal es la técnica de la miometrectomia típica y reglada. Sin embargo, debemos hacer presente también que, en ocasiones, dada la topografia, número y volúmen de los núcleos, obligados estuvimos a proceder circunstancialmente, pero sin variar la finalidad esencial que persigue.

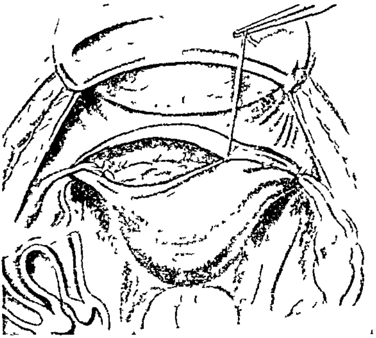

Fig 3 Vaciamiento miometral ó miometrectomia propiamente dicha (preferentemente con bisturi eléctrico) de las paredes uterinas, como lo esquematizan

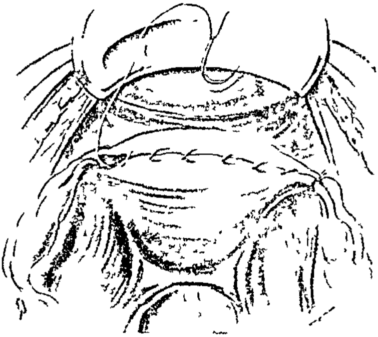

Fig 4 Llevandose esta exéresis lo más hacia abajo posible, para extirpar así los pequeños nódulos que podrian existir no apreciables a la vista y á la palpación.

Y tan es así que, mas de una vez nos hemos visto en la necesidad de sacrificar toda una pared del útero, conservando casi en su totalidad la opuesta que, miometrectomizada de inmediato, pudo por esto ser suturada, por su borde libre a la porción cervical, en el mismo sitio donde fué seccionada la otra.

Como se ve, pues, esta técnica puede ser indicada también en cualquiera de las amputaciones parciales del cuerpo uterino, debiéndo ser considerada en estas circunstancias, como un tiempo casi siempre imprescindible de ellas.

Desde Marzo de 1937, setenta y siete veces la hemos practicado (69 en el servicio y 8 en nuestra clínica privada), habiéndose ratificado por histerografia la nueva cavidad, de tamaño y forma variables, como es lógico suponer.

La conservación de esta vasta superficie de endometrio, siguió dando cumplimiento al acto hemorrágico menstrual, contribuyendo, al mismo tiempo, en su caracter de glándula de secresión interna, a evitar las alteraciones anatómicas y clínicas de los ovarios, ya que pudo continuar sinergícamente con estos, en su funcionalismo endócrino.

SUMARIO

La miometrectomia consigue, a expensas de la reseccion del miometrio mural, la mayor reduccion posible del cuerpo uterino, sea como operación típica y reglada, sea como tiempo operatorio, después de las miomectomias, histerectomias sub-totales atlas y amputaciones parciales del cuerpo, dejándo en su sitio una superficie tam ámplia de endometrio como ninguna otra técnica quede hacerlo.

Ese vaciamiento miometrial, a la vez que evita las secuelas anatómicas y funcionales a que expone la permanencia de un cuerpo voluminoso, permite hacer una más prolija investigación y extirpación de los pequeños nódulos que, de otra manera, podrían quedar ignorados.

La conservación en la forma que queda expuesta de una vasta superficie endometrical, permite, no sólo dar cumplimiento en forma normal al acto hemorr

choledochi) causes pain, often severe, in the epigastrium. Pain can be caused by a spasm of the sphincter of Oddi in apparently normal filling and functioning gallbladders.

Hypertonic contraction of this choledochoduodenal muscular mechanism may result in biliary dyskinesia, the symptoms of which may simulate the pain of cholecystic disease (Ivy and Sandblom, 1934). In addition, there are longitudinal muscle fascicles, which lie in the angle between the pancreatic and bile ducts, some of them being attached to the margins of the choledochus window. Thus, these two muscular mechanisms may serve as a force inhibiting the flow of bile into the duodenum. There is, in addition, a meshwork of fine "musculus proprius ampullæ" or "sphincter ampullæ." It consists of lateral bundles of longitudinal muscle fibers which overlie an inner circular layer. Should the sphincter ampullæ be hypertrophied, or the orifice of the choledochus narrowed by inflammatory processes, then these muscle fibres might well be factors in bringing about the reflux of bile into the pancreatic duct (Boyden et al). In addition to these main portions there are muscle fibers in some adults which completely encircle the pancreatic duct, and others, the chief function of which is to reinforce the window of the intestinal wall, over-stimulation of which will produce biliary dyskinesia.

Differential Diagnosis.—Westphal's classification of biliary dyskinesia is as follows:

(1) Hyperkinetic:
  (a) Hypermotile—increased motility of gallbladder and ampullæ, with rapid emptying of bile and relaxed sphincter of Oddi.
  (b) Hypertonic—contraction of the gallbladder against spasm of the sphincter with spastic distention and cholic pain.

(2) Atonic:
  (a) Relaxation or atony of the gallbladder with spasm of the sphincter of the papilla of Vater, causing distention of the gallbladder with mild, continuous, "heavy" aching sensation.

Lyon has also classified the motor dysfunction of the extra-hepatic passages into two types: "spastic dysfunction" and "atonic dysfunction." He suggests that in the course of time a spastic sphincter may cause the gallbladder to become atonic. Newman has used the terms "spastic distention," and cautions against the division of dyskinetic states into hard and fast entities.

In regard to this concept of dyskinesia, which maintains that biliary distress may result from a motor dysfunction of the extra-hepatic passages, Ivy wrote: "Two pertinent questions present themselves for answer: (1) Can the sphincter of the common duct or the choledochoduodenal mechanism contract with sufficient force to prevent evacuation of the contents of the contracting gallbladder? (2) Is it possible for the resulting pressure to produce pain in the noninflamed biliary passages?"

The answer to both questions is in the affirmative. The resistance of the sphincter of Oddi is two and one-half times the contractile power of the gallbladder or the secretory power of the liver. Ivy thinks this concept of biliary dyskinesia also provides a rational basis for the persistent symptoms of gallstone-colic or epigastric pain and distress even in those patients without gallstones. The pain of this so-called "cholecystitis," when a normal gallbladder is found at operation, has been described as "hepatic neuralgia."

It is not only possible, but probable, that the presence of an irritable or hypertrophied sphincter of the common duct explains the recurrence of symptoms in many patients following cholecystectomy. Early relief would be due to the temporary paralysis of the sphincter, if it were widely dilated at the time of the cholecystectomy. But, after recovery from this temporary paralysis, the irritable or the hypertrophic sphincter may again produce painful symptoms which are due to biliary tract distention. The recognition of this unrelieved symptomatology should emphasize the importance of continued medical and surgical management of these patients. Some who have had their gallbladders removed and have symptoms due to partial obstruction of the biliary passages are benefited by a choledochoduodenostomy.

In this connection, Aschoff reports a series of 215 cases in which 25 stone-free gallbladders were removed. Of the 25, seven had residual symptoms accountable only by the dyskinetic process. It is likely that the number of discouraging results may be fewer when the idea of a functional disturbance and persistent spasm of the sphincter is better understood and managed by both the internist and the surgeon.

CHOLECYSTECTOMY PLUS DILATATION OF SPHINCTER OF ODDI

In a cholecystectomy plus a supraduodenal choledochotomy we were surprised when, on opening the common bile duct, gallstones were present in about 20 per cent of our patients who had them in the gallbladder. After these stones were removed dilatation of the sphincter of Oddi relieved a few more patients with chronic cholecystic disease without increasing the mortality. Still a number, perhaps 20 per cent, of these patients who had been previously diagnosed as ill with cholecystic disease and who had a cholecystectomy performed, complained that (1) they had not been cured; (2) they had not been relieved; (3) the symptoms of gaseous indigestion, pain, fever attacks and, in some cases, jaundice, etc., still persisted.

SPHINCTER OF ODDI—ITS ANATOMY AND PHYSIOLOGY

Glisson (1681) first suggested that a sphincter muscle existed at the outlet of the common bile duct. Vater published his article on the orifice of the common bile duct in 1720. In 1878, Gage described for the first time the circular musculature of the ampulla of Vater. In 1887, Oddi, of Italy, described the choledochoduodenal pancreatic juice.

In 1923, and again in 1932, Westphal, of Berlin, described the sphincter of the common bile duct as composed of two parts, possessing a different structure and function. The first part consisted of a proximal muscular coat which surrounds the antrum beginning at the junction of the duct with the ampulla. The second part consists of a distal group of muscle fibers which surround the papilla and form the round sphincter outlet of the common bile and pancreatic ducts. Its nerve supply comes from the greater splanchnic and vagus nerves.

The most complete accounts of the anatomy of this sphincter in man are those of Hendrickson (1898), Nuboer (1931), Dardinski of the Mayo Clinic (1934), Schwegler and Boyden (1937), Boyden (1937), and Kreilkamp and Boyden (1937). According to Boyden and his co-workers, "the sphincter of Oddi in man, consisting of three portions, is a continuous sheath of muscle fibers extending from a level near the lower end of the ampulla of Vater. It thus invests the bile duct, the ampulla of Vater and three sides of the pancreatic duct. The sphincter of the choledochus is a sheath of circular muscle fibers which surrounds the entire intramural course of the bile duct. It reaches its greatest thickness near the upper end of the ampulla and is a zone capable of retaining a column of bile, even in the presence of an abundant flow of pancreatic juice. Tonic contraction of this annular muscle will close this portion of the ductus choledochus and thus force the bile, continuously secreted by the liver, to enter the gallbladder.''

The construction and function of this little ring of smooth muscle has a very important part to play in the process of our digestive behavior. Anatomists have proved that a definite smooth muscle sphincter exists at the entrance of the pancreatic and common bile ducts into the duodenum—the choledochoduodenal junction. The sphincter is not altogether independent of the duodenal musculature, as it is intimately blended with it. It consists of longitudinal, oblique and circular smooth muscle fibers. It has a dual nerve supply, the sympathetic fibers coming from the greater splanchnic through the celiac axis, and the parasympathetic fibers, which come from the right branch of the vagus nerve. Harting, who developed the silver impregnation method, demonstrated the distribution of the nerve plexus of the gallbladder and biliary passages. He compared the nerve supply of the bile ducts with Auerback's plexus of the gastro-intestinal tract.

The functions of the proprius ductus choledochi can be stated as follows:

(1) Filling of the gallbladder and regulating the pressure mechanism in the biliary passages; (2) preventing regurgitation of duodenal contents and possible ascending infection into the common bile and pancreatic ducts; (3) opening of the sphincter of Oddi by duodenal peristalsis, and (4) controlled by the vagi and splanchnic nerves which supply both the gallbladder and the sphincter of Oddi. These nerves regulate the timing of the biliary and pancreatic discharge into the duodenum.

Westphal reported that when the parasympathetic vagus nerve is stimulated below the diaphragm with a weak current, the gallbladder contracts, the antral portion of the ampulla of Vater manifests peristaltic movements and the papilla of Vater relaxes. He views this as being the normal type of response. On the other hand, when the sympathetic splanchnic nerve is stimulated, he reported that the gallbladder and antral portion of the ampulla relax while the sphincter proper and the papilla of Vater contract.

DISTURBANCES OF THE SPHINCTER OF ODDI

My contention is that a spasm of the sphincter of Oddi is brought about by abnormal stimuli coming from the preganglionic vagus or from fibers of the splanchnic nerves. These nerves supply the various organs of the upper gastro-intestinal tract as well as the choledochoduodenal sphincter.

The secretory function of the liver, stomach, intestine and pancreas is started by hormones, chemical messengers, i.e., gastrin and secretin. Their entrance into the bowel is regulated by the vagus and splanchnic nervous mechanism. Any pathologic process of the gastro-intestinal tract can interfere with the secretion and flow of bile, pancreatic juice and even the succus entericus, the secretion formed from the wall of the small intestine. These alkaline fluids with their ferments, which are absolutely necessary to carry on the digestion in the small bowel, are not released at the right time or in sufficient quantities to act upon the acid-chyme coming from the stomach. Normal digestion cannot take place in the small intestine because the biliary excretion of the liver, especially the strongly alkaline secretion of the pancreas, is not properly liberated. These secretions are not freed to act on the partially digested acid-chyme coming from the stomach Following a cholecystectomy, whether or not it is combined with a dilatation of the sphincter of Oddi, many patients continue to suffer from abdominal distress of flatulence, belching and gaseous indigestion Some have fever, chills, pain and even jaundice This occurs, in my opinion, because spasm of the sphincter of Oddi has not been permanently removed, the flow of bile and pancreatic juice into the duodenum has not been established

My experience, like that of many others, with dilation of the sphincter of Oddi, has proved anything but satisfactory Cutler, Zollinger and associates have pointed out that it causes trauma, edema and necrosis of the mucous membrane lining of the papilla duodeni

Passing a dilator that measures only 7 mm, stretches the opening only temporarily It contracts as soon as the anesthetic wears off A 9 mm dilator stretches the sphincter of Oddi so that tearing of its smooth muscle fibers takes place Hemorrhages occur in the spincter ring and it invariably contracts in a short time causing further trouble and spasm Healing after such wide dilatation usually takes place by cicatricial contraction In two of my patients the cicatricial contraction which followed caused obstruction and jaundice A second operation on one patient (transduodenal sphincterotomy of Oddi and prolonged biliary catheter drainage) had to be carried out In another patient, two years later, a supraduodenal endocholdochus section of the sphincter of Oddi promptly cured the patient

PHARMACODYNAMICS

Drugs which at one time were thought to relax, but later were found to cause, spasm of the smooth muscle sphincter are morphine, pilocarpine, etc Both morphine and pantopon produce spasm of the sphincter duodenal mechanism Drugs that temporarily relax the sphincter of Oddi are magnesium sulphate, atropine, sodium sulphate, magnesium oxide, nitroglycerine and nitrates All treatment to date, however, with drugs has had little success in curing cholecystic disease

OPERATIONS OF THE BILIARY TRACT

In 1630, Zambecarri was the first to remove the gallbladder The operation was performed on a dog with success As early as 1667, Entmuller stated that no medicine would dissolve or cure gall stones His experiments on the dog proved that the removal of the gallbladder had no deleterious effect on the passing of bile into the bowel He paved the way by these experiments for the operations of cholecystostomy and cholecystectomy Cholecystostomy was first performed on a human in 1687 by Van der Weil, and again 51 years later in France (1738) by Amyaudi, in 1742 by Muller and in 1743 by Jean Louis Petit The latter surgeon and others of his day cut through the skin of the abdominal wall down to the peritoneum to try to make the gallbladder adherent to it with plasters which consisted of onion, horse radish and cantharides In 1859, Thudichum performed cholecystostomy in two stages, first suturing the gallbladder to the abdominal wall and later opening it In 1868, Bobbs was the first American surgeon to do a cholecystostomy Ten years later, in 1878, Simms performed a cholecystostomy on a patient with dropsy In 1882, Langenbuck, a German surgeon, performed the first colecystectomy In 1885, Courvoiser and Thernar, of France, did their first cholecystostomy Ohage was the first in America The first cholecystectomy was not done in England until 1894 because of the strong opposition of Tait In 1887, Monastyrski did a cholecystojejunostomy Reidel, in 1888, devised, and Sprengel, in

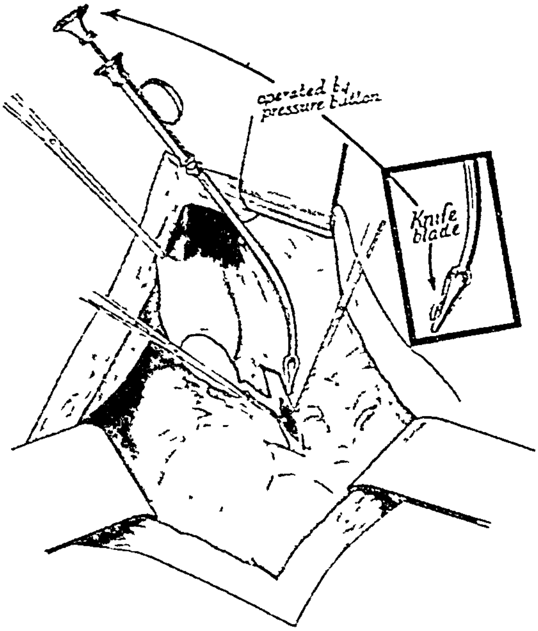

Fig. 1. De Muth sphincterotome shown ready to enter common bile duct supraduodenally.

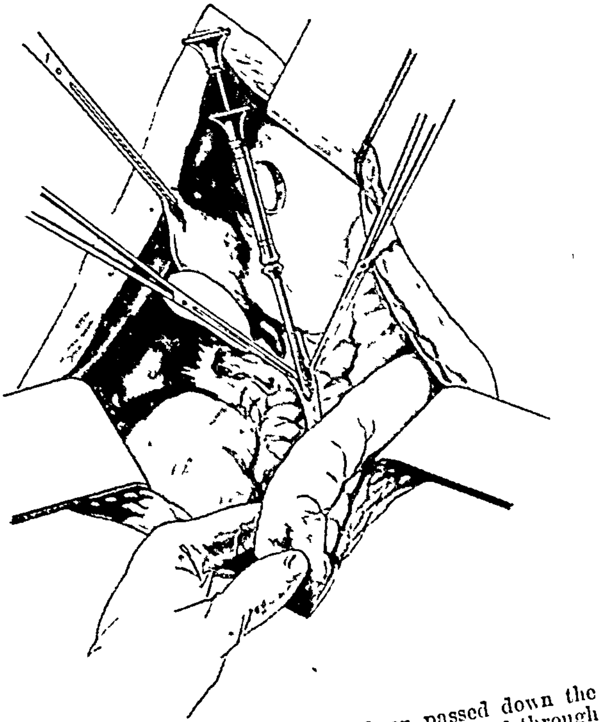

Fig. 2. Sphincterotome has been passed down the common bile duct. The 2 mm. beak has passed through the papilla duodeni and is felt and seen bulging the anterior duodenal wall.

or could not be felt with a finger in the foramen of Winslow. The patency of the ampulla of Vater is next determined. A small catheter (size 12) attached to a long beaked syringe is next inserted and the duct is thoroughly washed out with warm saline solution. Small stones and debris will readily flow out, but many are so embedded in its wall that only a scoop or forceps can dislodge them. This must be done gently lest the wall be perforated. The bile passages are cleaned of as many stones as possible. No doubt many small stones remain and are held fast in the ulcerated columnar epithelial lining of the duct. It is these minute stones which are so often missed and will later become larger, causing the post-operative symptoms of common duct pathology.

The sphincterotome is now gently
d through the supraduodenal chole-
dochotomy opening and down the com-
mon duct (Fig. 1). It is gently manipu-
lated until the 2 mm. beak is felt easil
by pressing the anterior duodenal wa
over it (Fig. 2). This anterior duoder
wall is allowed to come away from t
point of the instrument (Fig. 3). T
button controlling the knife is pres
home next, as the instrument is advar
slightly downward. This maneuver s
out the concealed knife in the olive
severing the sphincter of Vater.
button is immediately released ar
bulb of the instrument can be
freely to and fro into the duo
(Fig. 4).

The instrument is now withdra
the catheter attached to the sy
inserted into the duodenum (F
syringefull or two of warm sal
tion is run into the duodenum
drawn to ascertain if any ble

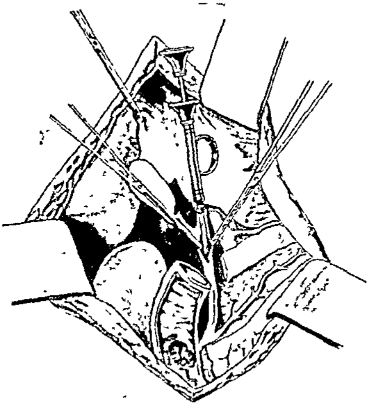

Fig. 3 An open section of the second portion of the duodenum, showing the point of the sphincterotome entering the papilla duodeni.

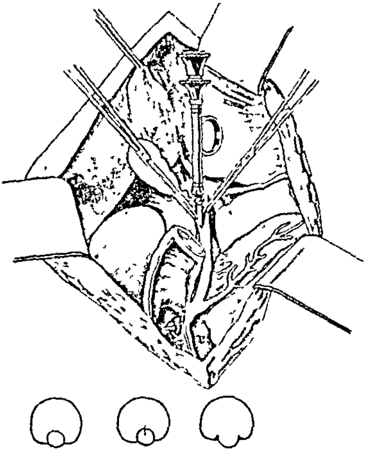

Fig 4 The button has been pressed home, and the knife, which was hidden in the olive tip, has emerged and sectioned the sphincter of Oddi.

taken place. The small catheter is then withdrawn until about 1 in. is left in the common bile duct. It can be fixed there by a suture and the choledochotomy opening closed snugly around it. This catheter can thus be used for external drainage until such time as the surgeon's experience will permit him to close, without anxiety, the common bile duct. A Penrose drain is always left down to the depth of the renal fossa. This takes care of any seepage or infection which might occur.

If the sphincter of Oddi has really been sectioned and the common bile duct not unduly traumatized, the small catheter left in permits the bile to flow freely around it into the duodenum. Thus very little bile and no pancreatic juice will drain externally.

AUTHOR'S SPHINCTEROTOME

This instrument consists of several parts, a brass olive-shaped bulb, a flexible copper shaft, brass hypo-syringe

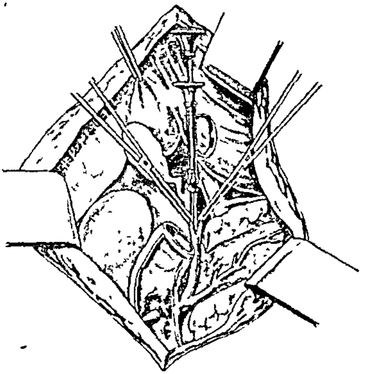

Fig 5 The knife is back in its olive bulb and the bulb is in the duodenum.

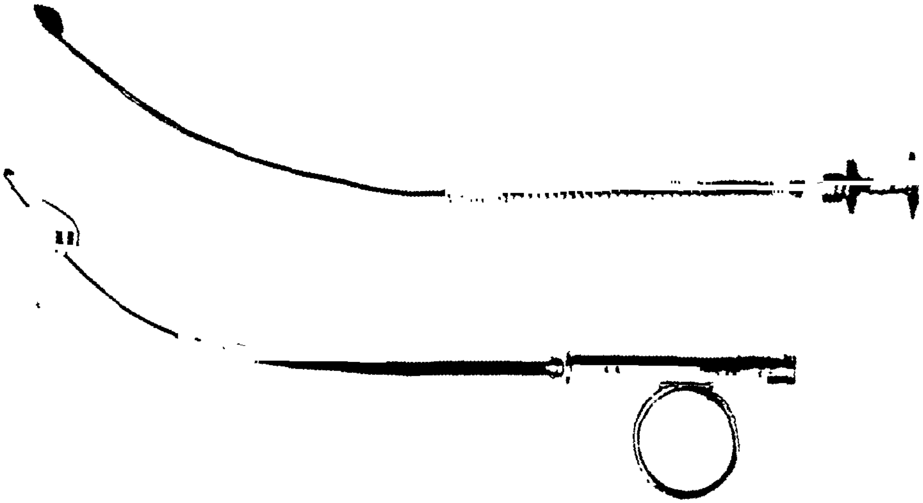

Fig. 6. Illustration showing construction of the De Muth sphincterotome.

barrel for the 8 cm. steel coil spring which presses on a collar of the shaft of a chrome knife keeping it in the recess of the olive bulb. The bulb is 2 mm. thick at the beak, 7 mm. at its widest part, and 2½ cm. long. The copper shaft is 15 cm. long and ½ cm. wide. The brass barrel, with its perforated screw top, to whose side is attached the finger ring, is 6 cm. long. The chrome steel knife, stem and screw top, is 25 cm. long. The olive-shaped bulb, copper shaft and lower 3 cm. of the brass barrel, which holds the spring, are slit to permit the knife blade to reach the bulb of this instrument. The knife is flanged on its deeper portion to prevent its coming out of this slit (Figs. 6 and 7).

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SUMMARY

A study of the anatomy, physiology and pathology of the biliary and duodenal-pancreatic sphincter mechanism has been presented. It has been shown that normal digestion cannot take place in patients suffering from chlocystic disease. This is due to the fact that bile and pancreatic juice cannot enter the duodenum at the proper time or in sufficient amounts, due to a spasm of the sphincter of Oddi.

This spasm has been shown to persist after cholecystectomy, cholecystostomy and cholecystectomy supplemented by a dilatation of the sphincter of Oddi, also in patients suffering from biliary dyskinesia. Surgical technic—a supraduodenal endocholedochus section of the sphincter of Oddi, has been devised and made pos-

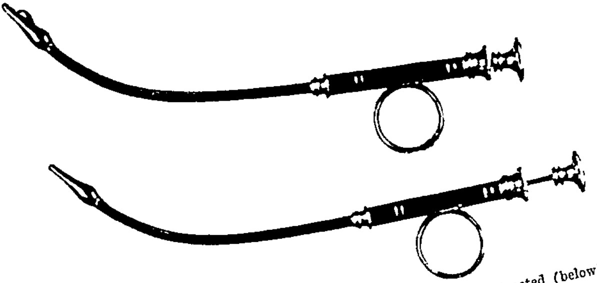

Fig. 7. Sphincterotome showing blade exposed (above), and retracted (below).

sible by a specially designed instrument. A technic is submitted to be used as a primary procedure in all patients with cholecystic disease and biliary dyskinesia, whose symptoms are such as to require operative relief.

SUMARIO

Presenta un estudio de la anatomia, fisiologia y patologia del mecanismo esfintero-duodenal que rige el paso de las secreciones biliar y pancreatica. Se demuestra que la digestión no puede verificarse normalmente en los pacientes que sufren de enfermedades de la vesicula. Esto se debe a la imposibilidad de que la bilis y el jugo pancreático penetren en el duodeno al tiempo debido ó en cantidades suficientes a causa del espasmo del esfinter de Oddi.

Este espasmo, se ha demostrado que persiste, despues de la colecistostomia, colecistectomia o colecistectomia con dilatación del esfinter de Oddi; asi mismo en pacientes que padecen de disquinesia biliar (espasmo funcional). Se hace posible por medio de un neuvo procedimiento quirurgico con un instrumento hecho especialmente para este objeto, practicar el corte del esfinter de Oddi por la via endocolédoca. Se ofrece este procedimiento para su empleo como medida primaria en todos los casos de colecistectomias y disquinecia biliar cuyos sintomas requieren una intervención quirurgica para aliviarse.

RÉSUMÉ

L'auteur présente une étude de l'anatomie, de la physiologie et de la pathologie du mécanisme du sphincter duodénal et biliaire. La digestion normale ne s'effectue pas chez les sujets souffrant de maladie cholecystique. Cela est dû à ce que la bile et le suc pancréatique ne se déversent pas dans le duodéum en quantité suffisante et en temps opportun, vu le spasm do sphincter d'Oddi. Ce spasme persiste après la cholécystostomie et après la cholécystectomie avec dilatation du sphincter d'Oddi, et aussi, chez les malades souffrant de dyskinesie biliaire. L'auteur soumet une technique à être employée comme premier stage dans toutes les cholecystectomies et chez tous les malades souffrant, de dyskinésie biliare dont les symptômes nécessitent une intervention chirurgicale.

Выводы

Автор описывает анатомию, физиологию и патологию желчных протоков и динамизм сфинктора Одди. Было показанно, что нормальное пищеварение невозможно у больных страдающих холецеститом. Этот факт обясняется тем, что желчь и сок поджелудочной железы не попадают во время в двенадцатиперстную кишку или поступают туда в недостаточном количестве из за спазма сфинктора Одди.

Этот спазм продолжается после холецистомии, после холецистектомии и даже после холецистектомии с дилотацией сфинктора Одди; а также у больных с желчной дискинеезией. Авоор изобрел специальный инструмент с помощью которого возможно проделять супрадуоденальную ендохоледоковую секцию сфинктора одди. Автор рекомендует этот прием, как первую ступень во всех холецистектомиях у больных страдающих дискинезией желчных путей.

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Cirugia Suparenal en Relacion con la Diabetes Mellitus*

(Suprarenal Surgery in Relation to Diabetes Mellitus)

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SUMMARY

The authors describe their experiences and physiologic aspects of hyperglycemia produced by puncture of the fourth ventricle and the results obtained from an interruption of the splanchnic nerves and denervation of the suprarenal capsules, with particular reference to diabetes. The technic is described.

ENTRE las diversas modificaciones inmediatas que suceden a la resección de los nervios esplácnicos, citaremos con referencia a este estudio, la disminución de la glicemia.

Es bien conocido el clásico experimento de Claude Bernard, determinando hiperglicemia y glicosuria por la picadura del cuarto ventrículo. Kalm, Blum, Eppinger, Erlandsen, Falta, Herzberg, Richards, Ruddinger y Vosburgh han demostrado que se trata de un reflejo adrenalinosecretor, puesto que inyectando adrenalina en la circulación se produce hiperglicemia, y con la ligadura de las venas suprarrenales se observa hipoglicemia.

Kalm, Mayer y Tschosaroff han demostrado asimismo que el reflejo en cuestión sigue la vía esplácnica, puesto que la picadura ventricular permanece ineficaz si se interrumpe previamente la citada vía. Geiger y Szirtes han observado a su vez aumento de la acción hipoglicemiante de la atropina, después de haber seccionado los esplácnicos, presentando así la contraprueba farmacológica.

Boggicco, David, Frouin, Mayer y Zuelzer, experimentando la ligadura de las venas suprarrenales en animales despancreatizados, concluyeron que la enervación bilateral suprarrenal produce acción hipoglicemiante, que ordinariamente modifica la curva glicémica a partir del tercer día, para volver a cifras normales después de algunas semanas.

Ciminata instituyó por vez primera la investigación sistemática sobre las modificaciones de la glicemia, consecutivas a la enervación suprarrenal, experimentando en animales de laboratorio hiperglicémicos por excitación farádica del ciático, los que después de enervación bilateral en tiempos sucesivos, sobrevivieron largo tiempo presentando disminución de la hiperglicemia provocada.

Takats demostró posteriormente un notable aumento a la tolerancia de los hidratos de carbono, practicando la enervación suprarrenal bilateral o la enervación unilateral con resección esplácnica con capsulectomía contralateral; Takats observó que dicha tolerancia alcanzaba su máximo a los seis meses y persistía aun después de un año, atribuyéndola a repercusión circulatoria vasodilatadora en los islotes de Langerhans. Cesa Bianchi y Moretti demostraron a continuación, que puede reducirse notablemente el índice en algunos diabéticos, utilizando la ergotamina para atenuar o inhibir la inervación simpática, que constituye en realidad el complejo neurohormonal antagónico de la insulina.

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* Presented at the Third International Assembly of the International College of Surgeons held in Mexico City, August, 1941.

Manzanilla y Fonseca, empleando recientemente en el hombre el bloqueo esplácnico por alcoholización, han observado un notable e inmediato descenso de la glicemia, que al quinto día puede alcanzar cifras superiores hasta un setenta y cinco por ciento a las encontradas antes del bloqueo, persistiendo el descenso del índice glicémico hasta por dos semanas.

Asi pues, la sección simpática, anatómica o funcional, en relación con la inervación suprarrenal, da por resultado: a) ruptura del equilibrio vagopancreático-suprarrenoesplácnico, con hipoglicemia; b) hipoglicemia notable y duradera por hipoadrenalinemia; c) en animales diabéticos por despancreatización, desaparición frecuente de la glicosuria y en todo caso mayor tolerancia a los hidratos de carbono.

APLICACION TERAPEUTICA

Las investigaciones originales de Pende con fines a la limitación del funcionalismo suprarrenal, obtenida por la resección de los esplácnicos y la extirpación de los ganglios semilunares, dieron históricamente orígen a la enervación del plexo nervioso pericapsular suprarrenal, ideada experimentalmente por Ciminata y ejecutada quirúrgicamente por Donati, para reducir la hiperglicemia en la diabetes. Crile ha empleado asimismo la enervación suprarrenal en algunas formas de hipertiroidismo exoftálmico, úlceras pépticas gastroduodenales quirúrgicamente rebeldes, endarteritis obliterante juvenil, síndromes asténicos neurocirculatorios, epilepsía esencial e hipertensión maligna, pero la diabetes constituye la más clara indicación.

Dentro de lo consignado, se destaca la importancia que para la terapéutica de la diabetes pancreática tiene la sección simpática por enervación suprarrenal, dado que, reduciendo la hiperglicemia por disminución adrenalínica, tiende a equilibrar la insuficiencia pancreática existente con las benéficas modificaciones consiguientes en el trastornado metabolismo de los hidratos de carbono. Se hace caso omiso en esta ocasión de las diversas y sensibles modificaciones, funcionales e histológicas, inherentes a la estructura neurosimpática, modificaciones vasomotoras, motoras, secretoras, sensoriales y tróficas.

TECNICA OPERATORIA

Antes de proceder a su ejecución en el vivo, hemos practicado en el cadáver un gran número de veces diversas técnicas dirigidas hacia la enervación pericapsular suprarrenal, estudiando además la operación de Crile para la interrupción de la vía simpática por la ganglionectomía celíaca y enervación del plexo aórtico. En virtud de su sencillez y facilidad de ejecución, no obstante los naturales escollos de este tipo de intervención quirúrgica, recomendamos la técnica de la enervación yuxtaglandular suprarrenal descrita por Donati, que hemos resuelto emplear sistemáticamente con las modificaciones de detalle, derivadas de nuestra experiencia y en relación con las circunstancias de cada caso en particular.

RESULTADOS

Nuestra experiencia personal sobre este prometedor recurso brindado por la terapéutica quirúrgica no lo consideramos aun lo suficientemente amplio para sentar definitivamente conclusiones derivadas de nuestro criterio a este respecto Sin embargo, nuestra limitada experiencia sobre el particular, encaja dentro de los satisfactorios resultados obtenidos por la experiencia derivada de los casos referidos por cirujanos, que de esta accion terapéutica se han ocupado con positivo interés, y entre los cuales citaremos el caso clásico de Donati, el de Corachan y Cimarro, los tres muy interesantes de Giordano, y la importante estadística de sesenta intervenciones de Crile, en las que en ocasiones la enervación suprarrenal fué completada con la resección de los esplácnicos (Crile), obteniéndose un noventa por ciento de resultados buenos en los operados

RESUMÉ

Les auteurs mentionnent les experiences de physiologie sur la piqûre du quatrieme ventricule, qui produit une hyperglicemie, laquelle est empechée par la section de la voie splachnique ou par la dénervation des suprarénales En consequence, ils pratiquent la dénervation suprarénale dans le diabète La technique est presentée

SUMARIO

Los autores mencionan las experiencias de fisiología en las cuales la picadura del cuarto ventrículo produce hiperglicemia, lo cual es impedido por la interrupcion de la vía esplácnica o denervacion de las suprarenales En consecuencia, hacen la denervacion de las suprarenales en la diábetes La técnica es presentada

Выводы

Авторы описывают физиологическия характеристики гипергликемии произведенной пункцией четвертого желудочка и перерыва утробных нервов и денервации супраренальной капсюли, в особенности в отношении к сахарной болезни Авторы описывают технику

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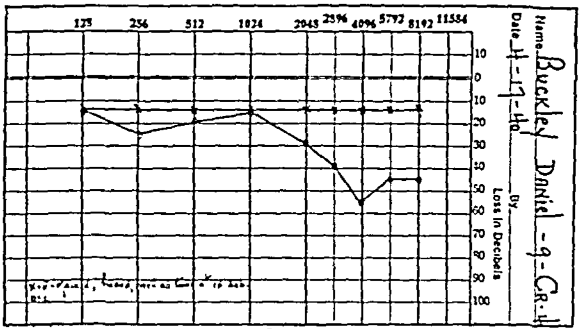
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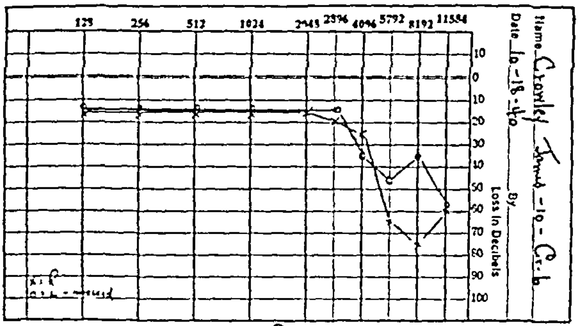
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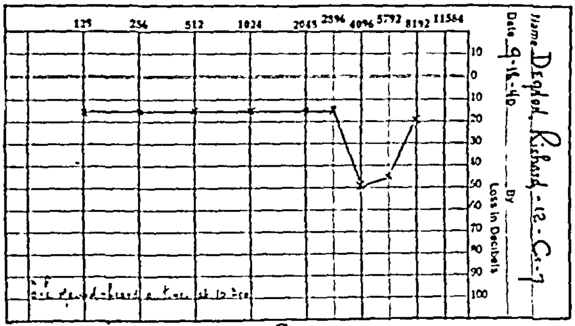
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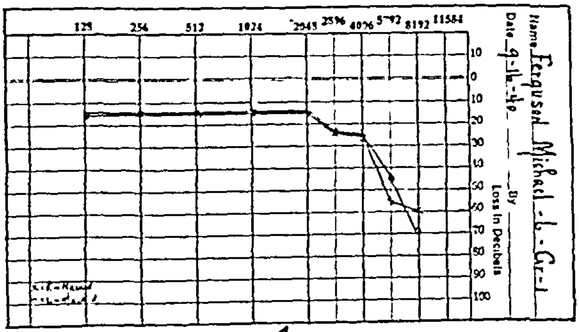
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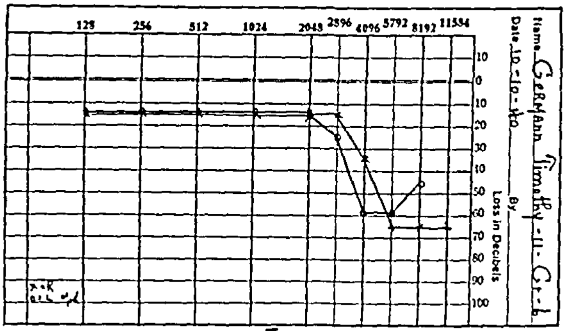
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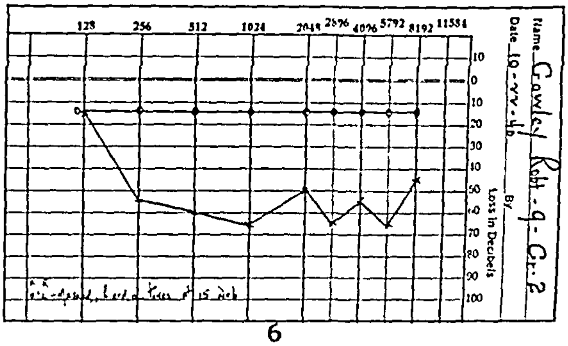
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Date 10-22-40
By
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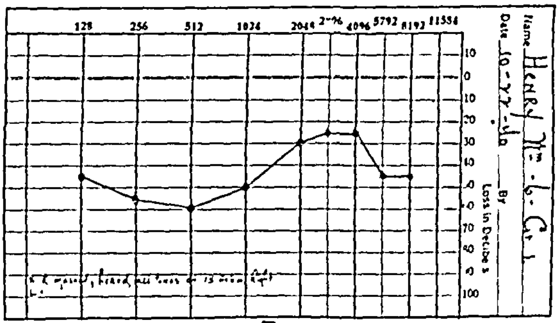
6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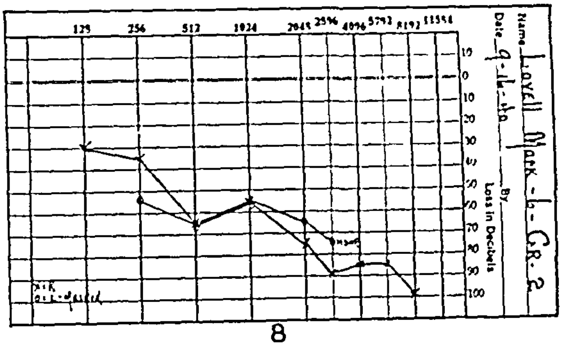
Date 10-22-40
By
Loss in Decibels

7


128 256 512 1024 2048 2896 4096 5792 8192 11584
10 0 10 20 30 40 50 60 70 80 90 100
Name Lovell Mark -6- Gr. 2
Date 9-16-40
By
Loss in Decibels
x = R

8

viation below normal in any part of the scale, whether it be low, middle or high tones?

TESTING PROCEDURE

Of the 26,000 children assigned for our investigation 2,567 were tested individually. The age range was from 5 to 16 years, from kindergarten to high school. I shall report the results found in eight schools, four schools where the children were foreign-born and poor and four schools where the great majority were from well-to-do native American homes.

The Maico audiometer was used throughout, and a threshold of 10-15 decibels was established in every school to offset the surrounding noises. Before each examination, all the frequencies of the audiometer were first tested by the examiner, who was able to hear them at zero or a little above zero. Where the examiner could hear distinctly all the frequencies at zero, the threshold was adjusted to 10 db., and when in doubt to 15 db.

Each child was tested for all frequencies, from 128-8,192 cycles, at the established threshold intensity. No case was considered as impaired hearing if the intensity had to be increased only 5 db. above the threshold, unless other tones were involved at a greater intensity. Similarly, single tonal gaps, no matter at what intensity, unilaterally or bilaterally, were disregarded. For example, there were many cases that heard all tones at 15 db. but could not hear the 2,896 at 25 or 30 db. bilaterally. There were others that heard all tones at 15 db. but could not hear the 4,096 frequency at 30 or 40 db., unilaterally or bilaterally. These cases were not considered as hard-of-hearing.

Why some cases should have impairment of hearing for certain isolated tones, I do not know. The failure is probably due to some defect in the basal part of the cochlea, as pointed out by Crowe and his coworkers. If this should be a sign of beginning cochlear damage, it would be interesting to check these cases at a later date and note whether those tones found affected in the previous test show progressive damage, and whether there is impairment of additional tones.

Six children were brought into the room at one time, with completed histories in their hands. They were asked to stand still while the examiner explained what was expected of them; that they were to hold the receiver to their ears, and to respond "yes" if they could hear the tones and "no" if they could not hear anything. The intelligent examiner, being on the alert and with the "interrupter" at his command, could tell in the great majority of cases whether the responses were reliable or not.

In this manner, and with proper and efficient help for filling out the case histories, we found that we could test from 30 to 40 children in one hour. With no interruption we could secure from 80 to 100 audiograms, with retests, in the morning, especially of children in the higher grades.

The histories were obtained directly from the child and compared with the principal's record at school. After the children of each school were tested, the cases were classified, and the principal of the school notified of those children found to be hard-of-hearing. A request was sent to the parent by the school to have the child examined by a competent otologist.

CLASSIFICATION OF CASES

The cases were classified according to the degree of decibel loss (see Table I). Those having a loss of 10-15 db. above the established threshold in two or more successive tones were grouped under "moderate;" those with a loss of 15 db. and over, above the established threshold and in successive frequencies, were classified as "severe." The cases were then reclassified under "low tones" when the lower frequencies were involved; and under "high tones" when the frequencies from 2,048 and up were impaired. Those who showed impair-

Pituitary Gland Transplantation*

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THE transplantation of animal pituitary in man has gained in practical interest only in the last few years. Lexer's fundamental work on free transplantations (1919) says of the subject of heterotransplantation, with which we are concerned in this paper, that "it can be excluded forever from all practical use because a rapid and complete degeneration always takes place." In particular reference to the pituitary, it was stated (Knauer) that transplantation is of no vital interest to the surgeon since all previous attempts have failed.

Autotransplantation, which is the only form with any chance to succeed, is naturally not to be considered in man. Homotransplantation, from man to man, is possible only in the rare instances in which the healthy organ of a fresh cadaver (e.g., through an accident) is immediately at hand. In fact, I found in the whole literature only one such case, reported by Hirsch and Demel.[1] In their case the posterior pituitary obtained from a fatal accident was immediately transplanted and "took" without any disturbances.

There still remains heterotransplantation, which, as mentioned above, was previously altogether rejected as a consequence of experimental results. Practical surgery of the endocrine glands has now overcome all the difficulties connected with heterotransplantations, and has attained remarkable success, as will be reported below.

The fact that there is no species specificity of hormones is favorable to heterotransplantation. Animal gland products are capable of bringing about typical hormonal changes in man. It can be proved, especially in the instance of the pituitary gland, that in certain cases of hypofunction of this organ, transplantation of fresh calf hypophysis compensates to a certain extent for the deficiency.

This hormonal action is much more effective and of longer duration than the results obtained by injections of pituitary extracts. The effect sets in immediately and strikingly; it is not delayed for a few weeks, as is assumed by one author. This can be observed, for instance, in diabetes insipidus, where the polydipsia and polyuria promptly decrease from day to day. The same is the case in Simmond's cachexia, in which the patients react in the first few days after transplantation, showing gain in weight.

DURATION OF CLINICAL EFFECT

It is possible that in the course of some weeks or months the implanted pituitary is subject to resorption. All experiments on animals seem to confirm this view. In three months' time the implanted organ is practically altogether resorbed. Notwithstanding this fact, the clinical effect persists, sometimes even for years. Various explanations may be given for this fact.

First, the transplantate may stimulate in some way the lowered function of the hypophysis. Acting as a stimulus, it may help in restoring normal conditions in the mechanism of the pituitary gland. This effect may last, even though on anatomical examination no more living cells are found in the transplantate.

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A similar stimulating effect may extend to other endocrine glands having reciprocal relations with the hypophysis: thyroid, adrenal cortex and sex glands. This may be another reason for an effect of long duration.

At any rate, this effect is not subject to any fixed rules, since in some cases the effect may last for years, in others only for months or even weeks. In the last instance the harmless procedure may be repeated.

TECHNIC OF TRANSPLANTATION

No undesirable by-effects were observed in my cases of pituitary transplantation. With the technic I employ, this operation can be performed on every patient, even in a cachectic state.

In developing this technic I have endeavored (1) to render the procedure as simple and harmless as possible and (2) to handle the transplantate as sparingly as possible, bringing it to its new site with the minimum loss of time. The removal of the pituitary is also simplified as far as possible.

Simplicity of Technic.—All major and traumatizing operations must be a priori discarded, especially the frequently recommended laparotomy with transplantation in the omentum of mesenterium. It is hard to see any reason for the selection of such a complicated procedure. The literature on this subject gives only an incomplete picture of the dangers of this operation, which may sometimes end fatally. Personally, I know of at least three cases of pituitary transplantation into the abdomen involving most severe complications, two of which ended fatally (Conn, Sauerbruch,[3] Kylin[4]). These cases should urge us to abandon completely laparotomy as a mode of transplantation, this method having no advantage and making the intervention unnecessarily complicated.

Even the implantation in a muscular pocket or in the posterior sheath of the rectus muscle is too far-reaching. Although these methods are not very dangerous, they may nevertheless give rise to abscess formation in the abdominal wall. Furthermore, the operation is a deep one, necessitating several layers of sutures, which disable the patient for a longer period.

The most favorable environment for the transplantation is, in my opinion, the subcutaneous fat tissue. It is extremely easy to reach and, owing to its rich vascularization, forms a suitable bed for the transplantate, which comes quickly in touch with its source of nourishment. The place of choice is the anterior thigh.

Deep sutures are thus completely avoided. Personally, I never use them, so as to eliminate all possible irritation. The transplantate disks (see below) are introduced into two pockets of the fat tissue, in which they hold. Only skin sutures are employed. This minor intervention is performed under local anesthesia and does small harm to the patient. In some cases I have tried to prolong the duration of the anesthesia by field block with basic novocain oil or by prolonged conduction block into the n. cutaneus femoris lat. I had the impression that in these cases the healing took place with less irritation, but it is still too early to form a definite opinion.

Treatment of Transplantate.—The removal of the transplantate was a most complicated procedure with all previous workers. In order to observe the absolutely necessary asepsis, the freshly slaughtered calf's head was trephined with all due asepsis, in the hospital or in the slaughterhouse. Matoley,[5] off and for instance, writes: ‘

skinned, the calf's head is brought to the operating theater, where the patient is already prepared. The calf's head is isolated and opened up by assistants who have scrubbed up in readiness for operation." Kylin[4] gives a similar description. A rather complicated and time-robbing method!

In the course of time I have developed the following technic: The calf's head is opened by heavy ax blows and the brain is removed. I then apply iodine to the whole cranial base and remove the pituitary along with the bordering dura and chiasma opticum with sterile scalpel and forceps. This procedure takes one minute. The specimen is put in a 2 per cent rivanol solution and immediately transported by car to the hospital.

In the hospital all is prepared for operation. The pituitary is put on a special table and is freed of its covering membranes with a special set of instruments. The chiasma opticum indicates the direction of the anterior lobe. The specimen is then cut with a sharp knife into four disks. These are transplanted into two pockets of the subcutaneous fat tissue, without any fixation sutures.

Some 20 to 30 minutes are required from the moment of removal to the time of imbedding in the subcutaneous fat tissue.

HEALING PROCESS

Healing never takes place by primary intention. Reports in the literature on healing per primam must be regarded with doubt, since the healing process which takes place in the deep layers, especially in the abdomen, can hardly be followed up. On the other hand, this is possible in the subcutaneous tissue.

Heteroplasty always causes a local anaphylactic irritation, even under ideal aseptic conditions. A sterile exudate is always found, usually of hemorrhagic character. It is often accompanied by slight subfebrile temperatures. This exudate is no indication for opening the wound. On the contrary, we refrain from interfering with the wound as long as possible. The exudate is gradually resorbed and the sutures are removed from the tenth to the sixteenth days, in several stages.

It is only after a long time that I have arrived at this technic of removal. In the beginning, when I used to employ the complicated methods of previous workers, I witnessed numerous purulent infections which necessitated a premature opening of the wound, thus interfering with the final results. I can also report a wound erysipelas in this connection. During the last two years all my cases healed smoothly, i.e., the wound necessitated no opening and the exudate was always resorbed.

My personal experience with pituitary transplantation goes back to June, 1937, thus covering a period of over three and one-half years. Most cases were sent to me by Professor H. Zondek, to whom I am also indebted for the stimulation of starting this work.

At the present I am able to report on 18 patients in whom a total of 20 transplantations have been performed. The following conditions were treated:

Simmond's pituitary cachexia	2
Diabetes insipidus	1
Depression with pituitary disturbances	1
Azoospermia	3
Retinitis pigmentosa	4
Amenorrhea and sterility	1
Dystrophia adiposogenitalis with alopecia	1
Pituitary dwarfism	2
Uncertain endocrine disturbances with hypofunction of the pituitary	3
Total	18

CASE REPORTS

CASE 1 The first case of *pituitary cachexia* was operated upon May 17, 1937 The patient was a 50 year old woman who had lost weight alarmingly and was in a most miserable nutritional condition After the operation she immediately began to gain weight This gain in weight increased progressively during several months Unfortunately, the patient died six months later, following an attempted suicide (not in connection with her illness)

CASE 2 The second patient with pituitary cachexia was an 18 year old girl For three years she had complained of discomfort and a sense of fullness in the gastric region, with no hunger sensation but much thirst Food intake was accompanied with no feeling of satisfaction Psychic changes also took place, previously gay, she had lately tended to mental depression Loss in weight amounted to 7 kg during a few [illegible] the weight of 37 kg, attempted treatment [illegible] extracts brought [illegible] by pro[illegible] metabo[illegible] [illegible] very small sella turcica.

The patient was treated for three weeks with forced diet, insulin, hydrochloric acid and anterior pituitary extract without any improvement physically or mentally On November 17, 1940, pituitary transplantation was performed Immediately a gradually increasing improvement set in The patient gained 5 kg in the first six weeks Her appetite grew better, she felt less thirsty and her psychic condition improved considerably Basal metabolism one week after operation was minus 10 The patient now looks fresh and alive She menstruates every fourteen days previously every four weeks She remains under observation

CASE 3 Of great interest is the case of *diabetes insipidus*, demonstrating most clearly the prompt and striking effect of pituitary transplantation

A 50 year old woman had complained for many [illegible] polyuria of 20 liters a [illegible] erable loss in weight, [illegible] annoying pruritus Treatment with [illegible] brought no marked improvement Posterior pituitary extract in injections and snuff powder gave only transitory improvement [illegible] 10 1938 pituitary implantation was [illegible]

days Also the [illegible] course of three or four days On the fifth day after operation, the wound had to be *reopened* because of suppuration On this occasion a part of the transplantate was washed out of the wound (wound tamponade) All previous symptoms reappeared immediately increased thirst, strong polyuria and pruritus

After the wound infection had subsided and the remainder of the transplantate "took," a sufficiently satisfactory end result was achieved gain in weight of 9 10 kg, marked improvement of the psychic state and almost complete disappearance of the pruritus Urine excretion was reduced from 20 to [illegible] liters a day Thirst is still high corresponding to the amount of urine [illegible] on the whole satisfactory condition has lasted [illegible] A second operat[illegible] improvement, [illegible] for non medical reasons

CASE 4 Since psychic conditions seemed to be favorably influenced by pituitary implantation, it was attempted also in a case of long lasting *periodic melancholy* Although this case can be reported here only briefly, it appears to me of special importance, since the severe psychic condition was followed by an evident improvement which has now lasted for two years

The 35 year old wife of a physician had suffered for seven years from severe depressions, these took the form of attacks persisting for five or six months Numerous symptoms indicating pituitary hypofunction were observed The first pituitary implantation was performed on March 16, 1939, this was followed by a second implantation on May 9, 1939, since in the first operation a part of the transplantate suppurated

The implantation was followed by a gain in weight of 1 kg in two weeks In the course of the following months the patient gained considerably in weight and in general felt well On May 18, 1940, her husband (a physician) wrote to us from Rumania that he was glad to state that his wife had completely recovered For the first time in eight years disagreeable mental phenomena had disappeared According to further communications, this happy physical and psychic condition has lasted up to the present, two years after operation

On the other cases in this series I wish to report only briefly, since some of the results are not clear, others are negative and some cases cannot be judged because of the short period of observation

CASES 5 18 In the patient with *sterility and long standing amenorrhea*, menstruation reappeared several times, to disappear again The sterility was not influenced

In the three cases of *azoospermia* no results were obtained by a single implantation

The case of *dystrophia adiposogenitalis* showed no improvement of the alopecia (face, axilla, mons pubis)

Two children (10 and 11 years old) with *pituitary dwarfism* did not respond to a single implantation with any growth in height

Three cases of *uncertain hypopituitarism* showed no marked improvement

Now, a few words concerning the four patients with *retinitis pigmentosa* The indication for pituitary implantation was made by Professor Zondek, on the assumption that it was worth trying The assumption was based on the fact that diencephalon, pituitary gland and eye belong to the same genetic unit, which includes the retina

Hypophysis produces, among other effects, a pigmentotropic hormone which has an immediate effect on the retina In the Ophthalmological Congress in Cairo (1937), it was emphasized that in disturbances and degenerations of the hypophysis, this hormone suffers changes, leading to retinitis pigmentosa Treatment with pituitary extracts is said to have given good results in some cases

On the basis of recent investigations it may be assumed that retinitis pigmentosa consists of a trans[illegible] leukocytic elements [illegible] to the retina [illegible] by hormonal [illegible] following a [illegible] breakdown of the pitui[illegible] [illegible]us leading to abnormal pigment deposition

The attempt to restore hormonal activity and normalize vascular permeability by pituitary implantation was thus justified It was hoped [illegible] the process or, as far as the changes are at all reversible, even to improve the condition.

Of the 4 cases 2 are too recent to allow of any judgment. The third patient is an imbecile girl whose statements are unreliable. Only the remaining case, with due caution, is worthy of comment.

This patient was a 26-year-old woman, born to intermarried parents. Another sister likewise suffers from retinitis pigmentosa. The retinitis in this patient was first observed at the age of 8 years, and grew worse. Visual power diminished and the field of vision was restricted.

On February 15, 1940, a calf's pituitary was implanted, which "took" well. On September 15, 1940, the attending ophthalmologist observed a gradual widening of the field of vision in all directions, which result had not been obtained previously by peroral and intravenous papaverin administration. The patient herself noticed a marked improvement in her condition; this lasted to the end of the year, when it again deteriorated. On January 16, 1941, a second implantation was performed, the result of which is yet to be observed.

It is as yet difficult to state to what extent the transitory widening of the field of vision is due to the operation itself and to what extent to the combination of this with administration of vascular dilating drugs (euphyllin, papaverin, etc.). At any rate, it must be pointed out that it had never before been possible to bring about a widening of the field of vision in this patient by means of vascular dilating drugs alone.

SUMMARY

The author's technic of pituitary implantation is greatly simplified, as regards both the obtaining of material from the calf and the implantation in man. Though slight local reactions always occur, pituitary transplantation performed with this technic is harmless.

The field of indication for this operation is not yet well defined. In Simmond's cachexia and in diabetes insipidus, however, there is no doubt as to the effect. A case of long-standing mental depression was beneficially affected by pituitary transplantation. Implantation was attempted in 4 cases of retinitis pigmentosa; in one, transitory improvement of the field of vision took place.

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SUMARIO

La tecnica de implantacion de injertos heteroplasticos de la glandula pituitaria desarrollada por el autor ha sido grandemente simplificada, tanto en la manera de obtener el injerto de la ternera como su implantacion en el hombre. Con esta tecnica las reacciones que generalmente siempre se presentan son muy benignas y de tipo local. Las indicaciones de esta operacion no han sido aun todavia bien definidas. En la caquexia de Simmond y en la diabetes insipida los resultados son satisfactorios. Un caso de depresion mental de larga duracion fue muy beneficiado con este metodo. En cambio en cuatro casos de retinitis pigmentosa que fueron operados solo uno presento una mejoria temporal del campo de la vision.

RÉSUMÉ

La technique de l'implantation de la glande pituitaire est simplifiée sout le rapport de l'obtention de la glande du veau et de son implantation chez l'homme. Inoique il y ait toujours une légère réaction locale l'implantation de la glande avec la téchnique de l'auteur est sans danger. Les indications de cette opération ne sont pas encore bien definies. Dans la cachexie de Simmond et dans le diabète insipide, l'operation donne d'heureux résultats. Un cas de dépression mentale de longue durée montra. Une grande amélioration après l'implantation de la glande pituitaire. Dans quatre cas de retinite pigmentèe, l'implantation fut effectivèe; dans un des cas, une amélioration temporaire du champ visuel fut obtenue.

Выводы

Автор описывает технику имплантации мозгового придатка, как его препаровку утелят и его пересадку человеку. Операция совершенно безопасна. Показания для воспользования этой операции пока еще мало разработаны. Нет сомнения, что получается эффект в кахексии Симмондса и в диабете инсипидус. Трансплантант мозгового придатка оказал хорошее влияние в случае длительной ушественной дипресии. Трансплантация была сделанна в четырех случаях ретинитис пигментоса, в одном случае получилось временное улучшение в поле зрения.

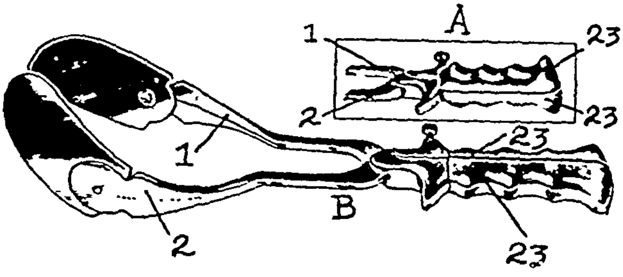

Fig. 5. The LaBreck forceps, showing in *A* the handles (23) rotated at an angle of 90° to the plane of the blades (1 and 2); in *B* the handles are locked in the same plane as the blades. The lock-nut and the grooves in the shanks (1 and 2), in which the blade-lock slides to hold the blades securely in any of the three positions shown in this figure, are also illustrated.

which there is still room for improvement.

With these criteria for perfecting the ideal forceps, and the faults or disadvantages of other forceps in use, I have designed a new instrument, the primary object of which is the reduction of fetal, maternal and neonatal mortality. The new forceps resemble, in general, De Lee's modification of the Simpson forceps (Fig. 5), and are as easily applied, since the thinner blades will occupy less space in the birth canal. The possibilities of free rotation, flexion and extension of the head, as well as the insertion of an elastic mechanism for the purpose of overcoming the friction of the head, is the anticipated achievement.

The forceps may well be considered as new in both principle and design, because, although their application is the same as the Simpson instrument, the swivel or ball joint, bilaterally, frees the head from any hindrance traceable to rotation, flexion or extension due to the pull of the operator. The head can gradually and fully turn automatically to conform with the diameters of the birth canal, in spite of the direction of

Rotation of the head is due to the pressure of the soft portion of the pelvis, especially posteriorly, which is Nature's attempt to adjust the fetal head to the compensatory space in the pelvis. It is possible to prevent any hindrance to the free rotation, flexion or extension of the head by the use of the new forceps, which thus permit the replacement or assistance of the powers of natural labor by a forceps operation made to conform as closely as possible with normal conditions.

A lock is provided in the shanks to hold the forceps blades in a fixed position. This can be released by the operator after application of the forceps, thus allowing automatic free movement of the blades and the head during rotation and delivery.

The new blades are designed to fit the head. Consequently, all curves are cephalic, so that the blades automatically adjust themselves to the pelvic curve when necessary. This contingency is provided for by a joint near the center of each blade (Fig. 6), which assists the adjustment during the rotating of the head from the occiput-posterior to the occiput-anterior position, or vice versa, for

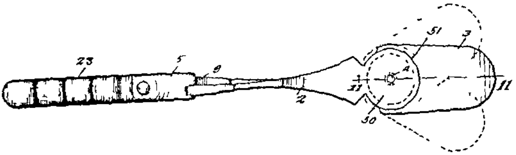

Fig. 6. Side elevation showing the position the blades may automatically assume during rotation of the child's head.

he aim of the forceps is to provide an
rument (1) permitting axis traction
bined with universally jointed ac-
n, and capable of being applied and
nipulated easier than other forceps
v in use; (2) rotating the head from
occiput-posterior or to the occiput-ant-
erior position, or vice versa, with one
plication, the blades of the forceps
tomatically changing to the required
lvic curve for delivery; (3) affecting
ual distribution of pressure through-
t the vaginal tract, so that episiotomy
ay often be unnecessary; (4) eliminat-
g a stiff bond between the head of a
ild and the physician's hand, the con-
ruction being such that during traction
e head can rotate, flex or extend to a
avorable outlet, there being no restric-
ions due to a tight grip of the operator's
and on the forceps; (5) by rotating the
rip through 90 degrees, the shanks of
he forceps levers will be locked together,
preventing the working portions of the levers from opening so that the physician has a means within easy control whereby the forceps may be locked in position against spreading, and (6) permitting adjustment through a screw in the handle to fit blades on the head.

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SUMMARY

The advantages of this forceps are that it is more easily applied than the Simpson forceps because the blades are thinner. When in place and locked as traction is applied, the head can be free to flex, extend or rotate to pass easily through the birth canal. Movement of the head along the longitudinal axis of the parturient canal is facilitated by its use. It reduces the pressure of the blades to a minimum and equalizes the distribution of compression to all parts of the birth canal during traction. The stiff bond between the head of the child and the hand of the physician is eliminated because the head can extend, flex or rotate as the pelvic curvatures require.

The forceps is simply constructed for safe manipulation and asepsis, but